EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1162	((opal or polychromatic) near5 glass$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:40
L2	10	l1 same ((visible or argon or krypton or blue or green) near5 laser$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:43
L3	148	((PTR or photothermorefract$6 or photorefract$6) near5 glass$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:40
L4	3	l3 same ((visible or argon or krypton or blue or green) near5 laser$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:40
L5	66	l1 and ((visible or argon or krypton or blue or green) near5 laser$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:43
L6	56	l5 not l2	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 11:43

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	25	amodei.in.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 09:56
L2	2	amodei.in. and radiation	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 09:58
L3	772	((photorefract$6 or photothermorefractive or PTR or hologra$6 or grating$2) with glass$4) same (uv or ultraviolet or xray or "x-ray" ro "x ray" or ionizing)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:18
L4	2203	((photorefract$6 or photothermorefractive or PTR or hologra$6 or grating$2) with glass$4) same (visible or laser)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:10
L5	2672	((photorefract$6 or photothermorefractive or PTR or hologra$6 or grating$2) with glass$4) same (visible or laser or interference or interfering)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:11
L6	260	l3 same l4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:11
L7	2	l3 same (prexposed or preexposure or prexposing or ((pre or flood or maskless) near2 expos$6))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:20
L8	7	l3 same (prexposed or preexposure or prexposing or ((pre or flood or maskless or without) near2 expos$6))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/17 10:20

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 NEWS  7  DEC 21  IPC search and display fields enhanced in CA/CAplus with the
                  IPC reform
 NEWS  8  DEC 23  New IPC8 SEARCH, DISPLAY, and SELECT fields in USPATFULL/
                  USPAT2
 NEWS  9  JAN 13  IPC 8 searching in IFIPAT, IFIUDB, and IFICDB
 NEWS 10  JAN 13  New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                  INPADOC
 NEWS 11  JAN 17  Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17  IPC 8 in the WPI family of databases including WPIFV
 NEWS 13  JAN 30  Saved answer limit increased
 NEWS 14  JAN 31  Monthly current-awareness alert (SDI) frequency
                  added to TULSA

 NEWS EXPRESS  FEBRUARY 15 CURRENT VERSION FOR WINDOWS IS V8.01a,
               CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 19 DECEMBER 2005.
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=> s gaissinsky/au
L1            0 GAISSINSKY/AU

=> s gaissinsky
              0 GAISSINSKY
L2            0 GAISSINSKY

=> s gaissinsky/in
L3            0 GAISSINSKY/IN

=> s (opal or ptr or photothermorefractive or polychromatic or photorefract?)(3a)(glass?)
           6728 OPAL
            662 OPALS
           6874 OPAL
                  (OPAL OR OPALS)
            772 PTR
             25 PTRS
            788 PTR
                  (PTR OR PTRS)
             14 PHOTOTHERMOREFRACTIVE
           3644 POLYCHROMATIC
              1 POLYCHROMATICS
           3645 POLYCHROMATIC
                  (POLYCHROMATIC OR POLYCHROMATICS)
           8611 PHOTOREFRACT?
         760902 GLASS?
L4          930 (OPAL OR PTR OR PHOTOTHERMOREFRACTIVE OR POLYCHROMATIC OR PHOTOR
                EFRACT?)(3A)(GLASS?)

=> s (visible or argon or krypton or blue or green or ndyag or yag)(3a)(lasre)
         308406 VISIBLE
             28 VISIBLES
         308426 VISIBLE
                  (VISIBLE OR VISIBLES)
         135722 ARGON
             29 ARGONS
         135723 ARGON
                  (ARGON OR ARGONS)
          28215 KRYPTON
              7 KRYPTONS
          28216 KRYPTON
                  (KRYPTON OR KRYPTONS)
         246518 BLUE
            897 BLUES
         246901 BLUE
                  (BLUE OR BLUES)
         248266 GREEN
           2392 GREENS
         249590 GREEN
                  (GREEN OR GREENS)
             47 NDYAG
          25287 YAG
             12 YAGS
          25292 YAG
```

```
                (YAG OR YAGS)
            5 LASRE
            1 LASRES
            6 LASRE
                (LASRE OR LASRES)
L5          1 (VISIBLE OR ARGON OR KRYPTON OR BLUE OR GREEN OR NDYAG OR YAG)(3
              A)(LASRE)

=> s (visible or argon or krypton or blue or green or ndyag or yag)(3a)(laser)
       308406 VISIBLE
           28 VISIBLES
       308426 VISIBLE
                (VISIBLE OR VISIBLES)
       135722 ARGON
           29 ARGONS
       135723 ARGON
                (ARGON OR ARGONS)
        28215 KRYPTON
            7 KRYPTONS
        28216 KRYPTON
                (KRYPTON OR KRYPTONS)
       246518 BLUE
          897 BLUES
       246901 BLUE
                (BLUE OR BLUES)
       248266 GREEN
         2392 GREENS
       249590 GREEN
                (GREEN OR GREENS)
           47 NDYAG
        25287 YAG
           12 YAGS
        25292 YAG
                (YAG OR YAGS)
       514206 LASER
       160067 LASERS
       527450 LASER
                (LASER OR LASERS)
L6      37688 (VISIBLE OR ARGON OR KRYPTON OR BLUE OR GREEN OR NDYAG OR YAG)(3
              A)(LASER)

=> s l4 and l6
L7          3 L4 AND L6

=> d all 1-3

L7   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:1028977  CAPLUS
DN   144:117101
ED   Entered STN:  25 Sep 2005
TI   Laser irradiation, ion implantation, and e-beam writing of integrated
     optical structures
AU   Righini, Giancarlo C.; Banyasz, I.; Berneschi, S.; Brenci, M.; Chiasera,
     A.; Cremona, M.; Ehrt, D.; Ferrari, M.; Montereali, R. M.; Nunzi Conti,
     G.; Pelli, S.; Sebastiani, S.; Tosello, C.
CS   Optoelectronics & Photonics Dept., Nello Carrara Institute of Applied
     Physics-CNR, Florence, 50127, Italy
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (2005), 5840(Pt. 2, Photonic Materials, Devices, and Applications),
     649-657
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal
LA   English
CC   73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
     Section cross-reference(s): 76
AB   Much attention is currently being paid to the materials and processes that
     allow one to directly write or to imprint waveguiding structures and/or
     diffractive elements for optical integrated circuits by exposure from a
     source of photons, electrons or ions.  Here a brief overview of the
     results achieved in our labs. is presented, concerning the fabrication and
```

characterization of optical guiding structures based on different materials and exposure techniques. These approaches include: electron and ion beam writing of waveguides in (poly)-cryst. lithium fluoride, uv-laser printing of waveguides and gratings in ***photorefractive*** ***glass*** thin films, and fs-laser writing in tellurite glasses. Properties and perspectives of these approaches are also discussed.

ST integrated optical structure laser irradn ion implantation electron beam

IT Diffraction gratings
(Bragg; laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT Germanosilicate glasses
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(Er-doped; laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT Optical waveguides
(channel; laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT Electron beam lithography
Films
Ion beam lithography
Ion implantation
Optical integrated circuits
Photorefractive materials
UV and ***visible*** spectra
UV laser radiation
(***laser*** irradn., ion implantation and e-beam writing of integrated optical structures)

IT Tellurite glasses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT Etching
(thermal, laser-induced; laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT 7440-52-0, Erbium, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dopant; laser irradn., ion implantation and e-beam writing of integrated optical structures)

IT 7789-24-4, Lithium fluoride, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(laser irradn., ion implantation and e-beam writing of integrated optical structures)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Abu Hassan, L; J Phys C; Solid state Phys 1986, V19, P99 CAPLUS
(2) Chierici, E; Proc 2002 IEEE/LEOS Workshop on Fibre and Passive Components 2002, P24
(3) Cremona, M; Appl Phys Letters 2002, V81, P4103 CAPLUS
(4) Cremona, M; Proc SPIE 2003, V4944, P323 CAPLUS
(5) Davis, K; Opt Letters 1996, V21, P1729 CAPLUS
(6) Ebendorff-Heidepriem, H; Opt Materials 2004, V25, P109 CAPLUS
(7) Ehrt, D; J Non-Crystalline Solids 2004, V345&346, P332 CAPLUS
(8) Forastiere, M; Opt Commun 2003, V217, P249 CAPLUS
(9) Fornarini, L; Thin Solid Films 2000, V358, P191 CAPLUS
(10) Liu, K; Appl Phys Lett 2004, V84, P684 CAPLUS
(11) Montereali, R; J Luminescence 1997, V4-6, P72
(12) Montereali, R; Opt Commun 1998, V153, P223
(13) Montereali, R; Proc SPIE 2002, V4829, P169
(14) Nahum, J; Phys Rev 1967, V154, P817 CAPLUS
(15) Nunzi Conti, G; Opt Eng 2003, V42, P2807
(16) Pelli, S; Optical Materials 1996, V5, P119 CAPLUS
(17) Pelli, S; SPIE Proc 2003, V4987, P13 CAPLUS
(18) Quercioli, F; Proc SPIE 2002, V4829, P683
(19) Schineller, E; J Opt Soc Am 1968, V58, P1171 CAPLUS

(20) Sebastiani, S; Optics Express 2005, V13, P1696 CAPLUS
(21) Svalgaard, M; Electr Lett 1994, V30, P1401 CAPLUS
(22) Ter-Mikirtychev, V; Progr Quantum Electron 1996, V20, P219 CAPLUS
(23) Ziegler, J; The stopping and ranges of ions in solids 1985

L7 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:711663 CAPLUS
DN 143:86561
ED Entered STN: 01 Sep 2004
TI Interaction of ***photothermorefractive*** ***glass*** with
nanosecond pulses at 532 nm
AU Glebov, Leonid B.; Smirnov, Vadim I.
CS School of Optics/CREOL, Univ. of Central Florida, Orlando, FL, USA
SO Proceedings of SPIE-The International Society for Optical Engineering
(2004), 5273(Laser-Induced Damage in Optical Materials: 2003), 396-401
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB ***Photothermorefractive*** (***PTR***) ***glass*** is a
photosensitive silicate glass where highly-efficient holog. optical
elements are created for visible and near-IR spectral region.
Photosensitivity of this glass is ranged down to 350 nm. Induced
absorption and refraction in ***PTR*** ***glass*** were studied
under consequent exposing to low power UV and high power laser radiation
of second harmonic of Nd: ***YAG*** ***laser*** at 532 nm (25 mJ, 5
ns). It was found that addnl. absorption induced in short wavelength
region by initial UV irradn. can be partially bleached by consequent
irradn. at visible region. Bleaching of addnl. absorption was obsd. after
high-power irradn. at 532 nm while no effect was obsd. after low-power
illumination with the same dosage. Induced refractive index of
PTR ***glass*** is higher in the area consequently exposed to
UV and high-power radiation at 532 nm compare to that in the area exposed
to UV radiation only. The maximal refractive index difference between
single-exposed and double-exposed areas was up to 10-4. Vol. Bragg
grating and complex hologram were recorded in ***PTR*** ***glass***
by visible radiation at 532 nm.
ST ***photothermorefractive*** silicate ***glass*** holog recording
photoinduced absorption refraction
IT Diffraction gratings
(Bragg; interaction of ***photothermorefractive*** ***glass***
with nanosecond pulses at 532 nm)
IT Aluminosilicate glasses
Bromide glasses
Fluoride glasses
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); PROC (Process)
(cerium potassium silver sodium zinc aluminosilicate bromide fluoride;
interaction of ***photothermorefractive*** ***glass*** with
nanosecond pulses at 532 nm)
IT Holography
Photoinduced optical absorption
Refractive index
UV and visible spectra
(interaction of ***photothermorefractive*** ***glass*** with
nanosecond pulses at 532 nm)
IT Holographic recording materials
(optical properties and holog. of ***photothermorefractive***
glass exposed to high power UV laser radiation and holog.
recording pn this pre-exposed glass with nanosecond pulses at 532 nm)
IT Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); PROC (Process)
(photosensitive; interaction of ***photothermorefractive***
glass with nanosecond pulses at 532 nm)
IT Silicate glasses
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); PROC (Process)
(sodium silicate, cerium potassium silver sodium zinc aluminosilicate
bromide fluoride; interaction of ***photothermorefractive***

glass with nanosecond pulses at 532 nm)
IT 1306-38-3, Cerium dioxide, properties 7681-49-4, Sodium fluoride, properties 20667-12-3, Silver oxide (Ag2O)
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(***glass*** ; interaction of ***photothermorefractive*** ***glass*** with nanosecond pulses at 532 nm)
IT 1314-13-2, Zinc oxide, properties 7758-02-3, Potassium bromide, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(***glass*** ; interaction of ***photothermorefractive*** ***glass*** with nanosecond pulses at 532 nm)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Efimov, O; Appl Optics 2002, V41, P1864 CAPLUS
(2) Efimov, O; Appl Optics, Optical Technology and Biomedical Optics (OT&BO) 1999, V38, P619 CAPLUS
(3) Efimov, O; Journal of Non-Crystalline Solids 1999, V253, P58 CAPLUS
(4) Efimov, O; Proc SPIE 1999, V3578, P554
(5) Glebov, L; Glass Sci Technol 1998, V71C, P85
(6) Glebov, L; Glass Science and Technology 2002, V75(C2), P294
(7) Glebov, L; Laser Weapons Technology III, Proceedings of SPIE 2002, V4724, P101
(8) Hariharan, P; Chapter 7: "Practical recording materials," 1996, P95

L7 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:658277 CAPLUS
DN 129:348906
ED Entered STN: 19 Oct 1998
TI Photosensitive thin film materials and devices

AU Simmons-Potter, K.; Potter, B. G., Jr.; Meister, D. C.; Sinclair, M. B.
CS Sandia National Laboratories, Albuquerque, NM, 87185-1423, USA

SO Journal of Non-Crystalline Solids (1998), 239(1-3), 96-103
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier Science B.V.
DT Journal
LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57

AB Planarization of photosensitive device technol. promises to expand the application options for this type of material. In this paper, we report on the prodn. of highly photosensitive thin films, without the use of post-deposition processing, which promise compatibility and integrability with III-V and Si processing. We study the optical bleaching of structural defects, responsible for the photosensitive response exhibited by our materials, and assess defect thermal stability. It is seen that films deposited at a substrate temp. of 600.degree. demonstrate defect stability up to temps. of .apprx.550.degree., whereas films deposited on ambient temp. substrates show evidence of structural relaxation at temps. >250.degree.. Such relaxation in the ambient temp. samples is accompanied by changes in the photosensitive response of the material. Finally, we demonstrate the operation of waveguide-based integrated photonic devices within our films.

ST germanosilicate glass photosensitive thin film sputtering; optical waveguide sputtered germanosilicate glass
IT Optical waveguides
Photorefractive effect
(germanosilicate ***glass*** sputtered films with UV-induced increase in refractive index)
IT Photochemical bleaching
(of germanosilicate glass thin films using ***krypton*** fluoride excimer ***laser*** radiation)
IT Annealing
(optical absorption of sputtered thin films of germanosilicate glass after isothermal and isochronal annealing)
IT UV laser radiation
(photobleaching of germanosilicate glass thin films using ***krypton*** fluoride excimer ***laser*** radiation)
IT Optical absorption

```
     UV and visible spectra
        (photosensitive sputtered thin films of germanosilicate glass)
IT   Germanosilicate glasses
     RL: DEV (Device component use); PEP (Physical, engineering or chemical
     process); PRP (Properties); PROC (Process); USES (Uses)
        (photosensitive sputtered thin films with no need for post-deposition
        processing, and optical waveguide applications)
IT   Films
        (sputter-deposited; germanosilicate glass sputtered films with
        UV-induced increase in refractive index)
IT   1310-53-8, Germania, properties   7631-86-9, Silica, properties
     RL: PEP (Physical, engineering or chemical process); PRP (Properties);
     PROC (Process)
        (photosensitive sputtered thin films of germanosilicate glass)
RE.CNT  15    THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(1) Friebele, E; Mater Res Soc Symp Proc 1986, V61, P319 CAPLUS
(2) Lemaire, P; Electron Lett 1993, V29, P1191 CAPLUS
(3) Meltz, G; Opt Lett 1989, V14, P823 CAPLUS
(4) Neustruev, V; Fibers Integrated Opt 1989, V8, P143 CAPLUS
(5) Nishii, J; Appl Phys Lett 1994, V64, P282 CAPLUS
(6) Potter, B; Electron Lett 1997, V33, P1073 CAPLUS
(7) Potter, B; SPIE 1997, V2998, P146 CAPLUS
(8) Simmons, K; J Non-Cryst Solids 1994, V179, P254 CAPLUS
(9) Simmons, K; Opt Lett 1991, V16, P141 CAPLUS
(10) Simmons, K; Opt Lett 1993, V18, P25 CAPLUS
(11) Simmons-Potter, K; Appl Phys Lett 1995, V68
(12) Simmons-Potter, K; J Opt Soc Am B 1996, V13, P268 CAPLUS
(13) Simmons-Potter, K; Jpn J Appl Phys 1998, V37(Suppl 37-1), P8
(14) Simmons-Potter, K; SPIE 1997, V2998, P93 CAPLUS
(15) Warren, W; Appl Phys Lett 1996, V69, P1453 CAPLUS
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```
=> s light sensitive glass
       1001870 LIGHT
          7495 LIGHTS
       1004660 LIGHT
                 (LIGHT OR LIGHTS)
        569665 SENSITIVE
            88 SENSITIVES
        569708 SENSITIVE
                 (SENSITIVE OR SENSITIVES)
        694654 GLASS
        134991 GLASSES
        724467 GLASS
                 (GLASS OR GLASSES)
L8          72 LIGHT SENSITIVE GLASS
                 (LIGHT(W)SENSITIVE(W)GLASS)

=> s color and l8
        407330 COLOR
         43436 COLORS
        429220 COLOR
                 (COLOR OR COLORS)
L9           9 COLOR AND L8

=> d all 1-9

L9   ANSWER 1 OF 9  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   1983:617431  CAPLUS
DN   99:217431
ED   Entered STN:  12 May 1984
TI   Glass sensitive to the visible spectrum
IN   Medrea, Cornel
PA   Intreprinderea de Sticlarie, Tomesti, Rom.
SO   Rom., 2 pp.
     CODEN: RUXXA3
DT   Patent
LA   Romanian
IC   C03C003-10; C03C003-08
CC   57-1 (Ceramics)
FAN.CNT 1
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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI RO 75969	B	19810228	RO 1978-93548	19780317
PRAI RO 1978-93548	A	19780317		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
RO 75969	IC	C03C003-10; C03C003-08
	IPCI	C03C0003-10; C03C0003-08

AB The sensitivity of the title glass (that changes from green to blue on changing the illumination from fluorescent to incandescent lamp) is controlled by the content of UO3. The glass is composed of UO3 0.3-1.0, SiO2 28-61, PbO 6-47, Na2O+K2O 10-20, As2O3 0.3, Nd2O3 2-5, B2O3 <5, ZnO <9, and Sb2O3 <1.5%. The ratio Nd2O3/UO3 is 7.5. The glass is easily fusible and basic. Therefore, it is necessary to introduce a sufficient quantity of an oxidant, preferably NaNO3, as the oxidn. effect of As2O3 manifests itself at higher temps. only. The presence of B2O3 and ZnO increases the tendency to devitrification.

ST ***light*** ***sensitive*** ***glass*** uranium oxide

IT Glass, oxide
RL: USES (Uses)
(photosensitive, green-blue ***color*** change in, uranium oxide effect on)

IT 1344-58-7
RL: USES (Uses)
(glass contg., light-sensitive silicate, green-blue ***color*** change in relation to)

IT 1309-64-4, uses and miscellaneous 1313-97-9 1314-13-2, uses and miscellaneous 1327-53-3
RL: USES (Uses)
(glass, light-sensitive silicate, green-blue change of, uranium oxide effect on)

IT 7631-99-4, uses and miscellaneous
RL: USES (Uses)
(oxidant, in glass batch for light-sensitive uranium oxide-contg. silicate glass)

L9 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1981:29471 CAPLUS
DN 94:29471
ED Entered STN: 12 May 1984
TI Some light on glass
AU Smith, G. P.
CS Corning Glass Works, Corning, NY, USA
SO Glass Technology (1979), 20(4), 149-57
CODEN: GLSTAK; ISSN: 0017-1050
DT Journal
LA English
CC 20-2 (History, Education, and Documentation)

AB A history is given of photosensitive glasses, whose properties are altered by exposure to light. The first such glasses had a limited range of ***colors*** , but polychromatic glass with a full range of ***color*** is now possible. In addn., optically active glass that alters the character of light and glass that reacts reversibly on irradn. are discussed.

ST glass light sensitive history; photosensitive glass history

IT Glass ceramics
(electrooptical)

IT History
(of ***light*** - ***sensitive*** ***glass***)

IT Light, chemical and physical effects
(on glass)

IT Glass, oxide
RL: SPN (Synthetic preparation); PREP (Preparation)
(magnetooptical)

IT Glass, oxide
RL: MSC (Miscellaneous)
(photochromic, history of)

IT Glass, oxide
RL: SPN (Synthetic preparation); PREP (Preparation)
(photosensitive)

IT Glass, oxide

RL: MSC (Miscellaneous)
(photosensitive, history of)

L9 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1977:410309 CAPLUS
DN 87:10309
ED Entered STN: 12 May 1984
TI Photosensitive colored glasses
IN Pierson, Joseph E.; Stookey, Stanley D.
PA Corning Glass Works, USA
SO U.S., 22 pp.
CODEN: USXXAM
DT Patent
LA English
IC C03C003-04
INCL 106052000
CC 57-1 (Ceramics)
Section cross-reference(s): 73
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4017318	A	19770412	US 1976-646259	19760102
	CA 1078657	A1	19800603	CA 1976-266171	19761119
	FR 2337110	A1	19770729	FR 1976-35380	19761124
	FR 2337110	B1	19830610		
	BE 848780	A1	19770526	BE 1976-1007791	19761126
	GB 1544288	A	19790419	GB 1976-53251	19761221
	JP 52085211	A2	19770715	JP 1976-160886	19761227
	BR 7608716	A	19771025	BR 1976-8716	19761228
	AU 7620954	A1	19780706	AU 1976-20954	19761230
	NL 7614629	A	19770705	NL 1976-14629	19761231
	DE 2659774	A1	19770707	DE 1976-2659774	19761231
PRAI	US 1976-646259	A	19760102		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4017318	IC	C03C003-04
	INCL	106052000
	IPCI	C03C0003-04; C03C0003-26
	IPCR	C03C0003-076 [I,C]; C03C0003-11 [I,A]; C03C0003-112 [I,A]; C03C0004-00 [I,C]; C03C0004-04 [I,A]; C03C0008-00 [I,C]; C03C0008-18 [I,A]; C03C0021-00 [I,A]; C03C0021-00 [I,C]; C03C0023-00 [I,A]; C03C0023-00 [I,C]
	NCL	501/013.000; 430/013.000; 501/057.000; 501/059.000; 501/064.000; 501/067.000; 501/069.000
CA 1078657	IPCI	C03C0003-04; C03C0003-26; C03B0023-20
FR 2337110	IPCI	C03C0003-26; C03C0021-00; C03B0032-00; G02B0001-00; G02B0005-20; G03C0007-00
BE 848780	IPCI	C03C0003-04
GB 1544288	IPCI	C03C0023-00
JP 52085211	IPCI	C03C0003-04; C03C0003-26; C03C0003-30
BR 7608716	IPCI	C03C0003-20; C03C0003-26
AU 7620954	IPCI	C03C0001-04; C03C0001-10; C03C0003-04; C03C0003-26; C03C0003-20
NL 7614629	IPCI	C03C0003-26; G02B0005-23; G03C0001-78; G03B0033-00
DE 2659774	IPCI	C03C0003-26

AB Alkali halide-contg. glass sensitive to high energy or active radiation is heat treated to form colored transparent or colored opacified glass. Multicolored photographs and designs may be imparted to the glasses contg. Ag, alkali metal oxides, and fluorides, chlorides, bromides, and(or) iodides. Thus, a glass slag contg. SiO2 72.7, Na2O 18.3, ZnO 5.0, Al2O3 6.8, Sb2O3 0.1, CeO2 0.018, Br 0.1, F 2.8, Ag 0.003, and SnCl2 0.016 wt.% was covered 66% with 2 strips of black UV-opaque masking tape and exposed to UV light. At 4 min, one tape was removed. At 6 min, the 2nd tape was removed and the slab was further exposed to UV light for 2 min. The slabs were heated to 540.degree. and held there for 1.25h. The white opaque slabs were further UV irradiated for 16 min and heated at 400.degree. for 0.5 h. The slab top had 3 colored strips: yellow 4 min UV, 1st tape), yellow green (6 min, 2nd tape), and green (8 min, untaped portion).
ST glass photosensitive colored decoration
IT Photography, ***color***

(on glass, UV ***light*** - ***sensitive*** ***glass*** for)
IT Glass, oxide
RL: USES (Uses)
(photosensitive, colored, contg. alkali halides, UV light-sensitive, for decoration with designs and photographs)
IT 1306-38-3, uses and miscellaneous 1309-64-4, uses and miscellaneous
1314-13-2, uses and miscellaneous 7440-22-4, uses and miscellaneous
7726-95-6, uses and miscellaneous 7772-99-8, uses and miscellaneous
7782-41-4, uses and miscellaneous 7782-50-5, uses and miscellaneous
21651-19-4
RL: USES (Uses)
(decoration of UV ***light*** - ***sensitive*** ***glass*** contg., with designs and photographs)

L9 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1977:77583 CAPLUS
DN 86:77583
ED Entered STN: 12 May 1984
TI ***Light*** - ***sensitive*** ***glass***
IN Kozel'skaya, E. S.; Khlystrova, O. I.; Polukhin, Yu. M.; Belyaeva, I. A.; Prokopets, V. G.; Koroleva, G. A.; Litvinov, P. I.
PA USSR
SO U.S.S.R.
From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1976, 53(47), 70.
CODEN: URXXAF
DT Patent
LA Russian
IC C03C003-30
CC 57-1 (Ceramics)
Section cross-reference(s): 73
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SU 539848	T	19761225	SU 1974-2059992	19740906
PRAI	SU 1974-2059992	A	19740906		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
SU 539848	IC	C03C003-30
	IPCI	C03C0003-30

AB The glass with expanded spectral light sensitivity ***color*** range, and light sensitivity degree contains La_2O_3 0.001-0.03, Pr_2O_3 0.001-0.02, Nd_2O_3 0.0008-0.05, Pm_2O_3 0.0005-0.005, and Sm_2O_3 0.0005-0.005 wt.% in addn. to SiO_2 60-85, Li_2O 5.5-15, Al_2O_3 2-25, ZnO 1-12, K_2O 2-8, Ag_2O 0.001-0.05, and CeO_2 0.004-0.06 wt.%.
ST glass light sensitive; rare earth oxide glass
IT Glass, oxide
RL: USES (Uses)
(light-sensitive, rare earth oxide effect on)
IT 1306-38-3, uses and miscellaneous 1314-13-2, uses and miscellaneous
12057-24-8, uses and miscellaneous 20667-12-3
RL: USES (Uses)
(glass, light-sensitive)
IT 1312-81-8 1313-97-9 12036-25-8 12036-32-7 12060-58-1
RL: USES (Uses)
(light sensitivity of glass in relation to)

L9 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1976:143020 CAPLUS
DN 84:143020
ED Entered STN: 12 May 1984
TI Recording of holograms on radiation ***color*** centers in glass
AU Bukharev, A. A.; Shtyrkov, N. I.; Yafaev, N. R.
CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR
SO Pis'ma v Zhurnal Tekhnicheskoi Fiziki (1975), 1(21), 975-7
CODEN: PZTFDD; ISSN: 0320-0116
DT Journal
LA Russian
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB The exposure to .gamma. rays or to uv radiation of K-B glass (with high concn. of K_2O) forms ***color*** centers and the glass becomes light

sensitive. Decolorization of the centers can be effected with a He-Ne laser and thus the glass is usable for reversal recording of holograms. A max. diffraction efficiency of 0.3% with an exposure of 35 J/cm2 can be obtained and the recorded holograms may be stored in darkness for several hr. After heating at 300.degree. and repeated .gamma.-ray irradn., the glass is ready for rerecording.

ST boron potassium glass holog recording

IT Glass
RL: USES (Uses)
(boron-potassium, with radiation-induced ***color*** centers of holog. recording)

IT Gamma ray, chemical and physical effects
Ultraviolet light, chemical and physical effects
(***color*** center formation by, in boron-potassium glass for holog. recording)

IT ***Color*** centers
(formation of, in boron-potassium glass by .gamma.- or uv-radiation for holog. recording)

IT Holography
(recording materials for, boron-potassium glass with radiation-induced ***color*** centers as)

IT 12136-45-7
RL: USES (Uses)
(***light*** - ***sensitive*** ***glass*** contg. boron and, with ***color*** centers for holog. recording)

IT 7440-42-8, uses and miscellaneous
RL: USES (Uses)
(***light*** - ***sensitive*** ***glass*** , contg. potassium oxide and, with ***color*** centers for holog. recording)

L9 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1971:104141 CAPLUS

DN 74:104141

ED Entered STN: 12 May 1984

TI Fine structure and properties of crystallized ***light*** - ***sensitive*** ***glasses***

AU Berezhnoi, A. I.; Blinov, V. A.; Krasnikov, A. S.

CS USSR

SO Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy (1971), 7(2), 305-9
CODEN: IVNMAW; ISSN: 0002-337X

DT Journal

LA Russian

CC 70 (Crystallization and Crystal Structure)

AB The effect of K2O, Na2O, and Li2O on the formation of metasilicate in the developed image was studied. Also studied was the microhardness of crystd. Li Al silicate ***light*** - ***sensitive*** ***glasses*** with a variable M2O content that had been exposed for different times and to different thermal treatment. In the developed image of such glasses, the formation of solid solns. based on Li metasilicate with the imbedding in its cryst. lattice of K2O or Li2O was established, and the size of the ***color*** centers, the degree of crystn., and the extent of deformation and microdistortion were detd. With increasing irradn. exposure time of the starting glasses from 15 to 30 min, the degree of crystn. increased, whereas the size of the ***color*** centers and microdistortions tended to decrease. With increasing K2O content from 1 to 3 mole % and with increasing Li2O content from 17 to 27 mole %, the microhardness of the photosensitive glass-ceramics increased, which is attributed to the formation of the resp. solid solns. based on Li metasilicate.

ST ***light*** ***sensitive*** ***glasses*** ; fine structure crystd glasses

IT Glass
RL: PRP (Properties)
(devitrification of light-sensitive alkali metal silicate, fine structure in)

IT ***Color*** centers
(in alkali metal silicate ***light*** - ***sensitive*** ***glass***)

IT Light, chemical and physical effects
(on glass properties, of alkali metal silicates)

L9 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1971:67173 CAPLUS
DN 74:67173
ED Entered STN: 12 May 1984
TI Dependence of the fine structure of zinc-containing photoglass-ceramics on the irradiation exposition of the initial ***light*** - ***sensitive*** ***glass***
AU Berezhnoi, A. I.; Krasnikov, A. S.
CS Mosk. Gos. Pedagog. Inst. im. Lenina, Moscow, USSR
SO Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy (1971), 7(1), 160-3
CODEN: IVNMAW; ISSN: 0002-337X
DT Journal
LA Russian
CC 57 (Ceramics)
AB The x-ray diffraction method is used for the 1st time to investigate the fine structure of Zn-contg. photosensitive glasses with a different exposure relative to the shape of a single diffraction line pertaining to the cryst. phase of Li metasilicate. The photosensitive glasses studied were prepd. from glass of the compn. of SiO2 71, Li2O 22, K2O 2, Al2O3 5 mole %, in which a part of the SiO2 was successively replaced by 1-10 mole % ZnO. To all glasses, 0.06% AgNO3 and 0.03% CeO2 were added, over and above 100%. The degree of crystn. achieved was detd. by a previously described procedure. Samples contg. 3 mole % ZnO had the max. degree of crystn. at all radiation exposures. A CaF2 crystal served as the std. The following cryst. phases were present in Zn-contg. photosensitive glasses: Li metasilicate and .beta.-eucryptite solid soln. With increasing radiation time the size of the ***color*** centers increased to a given crit. value, and then decreased, while the magnitude of the microdeformations 1st decreased and then increased.
ST zinc glasses photosensitive; photosensitive zinc glasses; glasses zinc photosensitive
IT Light, chemical and physical effects
(-sensitive materials, glass ceramics contg. zinc as)
IT Glass
RL: USES (Uses)
(devitrification of photosensitive)
IT ***Color*** centers
(in glass ceramics, photosensitive)
IT Crystal structure
(of glass ceramics, photosensitive)
IT Radiation, chemical and physical effects
(on ***color*** center formation, in photosensitive glass ceramics)
IT Glass ceramics
(photosensitive)
IT 1306-38-3 1314-13-2, properties 7761-88-8, properties 12057-24-8
RL: USES (Uses)
(devitrification of photosensitive glass contg.)

L9 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1968:438415 CAPLUS
DN 69:38415
ED Entered STN: 12 May 1984
TI Mechanism of coloring copper ***light*** - ***sensitive*** ***glasses***
AU Borgman, V. A.
CS USSR
SO Zhurnal Prikladnoi Khimii (Sankt-Peterburg, Russian Federation) (1968), 41(5), 1125-6
CODEN: ZPKHAB; ISSN: 0044-4618
DT Journal
LA Russian
CC 57 (Ceramics)
AB Cu-contg. colored glasses, during development, follow the same correlations reported in CA 56: 5564d.
ST copper ***light*** ***sensitive*** ***glasses*** ; ***light*** ***sensitive*** ***glasses*** Cu; sensitive glasses copper light
IT Glass
RL: PROC (Process)
(coloring of, by copper)
IT 7440-50-8, properties

```
     RL: PRP (Properties)
        ( ***color***   of glass contg.)

L9.  ANSWER 9 OF 9  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   1956:66724  CAPLUS
DN   50:66724
OREF 50:12424g-h
ED   Entered STN:  22 Apr 2001
TI   Photosensitive glass
AU   Reinhart, Friedrich
SO   Glas-Email-Keramo-Technik (1956), 7(153-6), 208-10
     CODEN: GEKTAX; ISSN: 0017-0763
DT   Journal
LA   Unavailable
CC   19 (Glass, Clay Products, Refractories, and Enameled Metals)
AB   A series of compns. of   ***light***  -  ***sensitive***    ***glass***
     is reviewed from the patent literature.  The glasses generally contain Cu,
     Ag, Au, or Pd, or a mixt. of them.  When Ag or Cu is used, the addn. is
     made of the Ag2S, AgCl, AgNO3, CuO, or Cu2O, plus a reducing agent.  If
     the reduced metal is present in sufficiently low concn. the glass remains
     colorless until exposed to short-wave radiation (e.g., ultraviolet light,
     x-rays).  On subsequent heating the exposed areas develop   ***color***  .
     Ce2O3 can be added to increase the light-sensitivity of the glass.
IT   Ceramic ware
        (from titanium-ore concn. wastes)
IT   Glass
        (light-sensitive, review on)
IT   Ceramic ware
        (porous, patents on)


=> s oshemkov or kopelov or guletsky
             0 OSHEMKOV
             0 KOPELOV
             0 GULETSKY
L10          0 OSHEMKOV OR KOPELOV OR GULETSKY

=> s (oshemkov or kopelov or guletsky)/au,in
             0 OSHEMKOV/AU
             0 OSHEMKOV/IN
             0 KOPELOV/AU
             0 KOPELOV/IN
             0 GULETSKY/AU
             0 GULETSKY/IN
L11          0 (OSHEMKOV OR KOPELOV OR GULETSKY)/AU,IN

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     FILE 'CAPLUS' ENTERED AT 12:16:04 ON 17 FEB 2006
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L2              0 S GAISSINSKY
L3              0 S GAISSINSKY/IN
L4            930 S (OPAL OR PTR OR PHOTOTHERMOREFRACTIVE OR POLYCHROMATIC OR PHO
L5              1 S (VISIBLE OR ARGON OR KRYPTON OR BLUE OR GREEN OR NDYAG OR YAG
L6          37688 S (VISIBLE OR ARGON OR KRYPTON OR BLUE OR GREEN OR NDYAG OR YAG
L7              3 S L4 AND L6
L8             72 S LIGHT SENSITIVE GLASS
L9              9 S COLOR AND L8
L10             0 S OSHEMKOV OR KOPELOV OR GULETSKY
L11             0 S (OSHEMKOV OR KOPELOV OR GULETSKY)/AU,IN

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                                                      ENTRY    SESSION
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 NEWS  5  DEC 14  2006 MeSH terms loaded for MEDLINE file segment of TOXCENTER
 NEWS  6  DEC 14  CA/CAplus to be enhanced with updated IPC codes
 NEWS  7  DEC 21  IPC search and display fields enhanced in CA/CAplus with the
                  IPC reform
 NEWS  8  DEC 23  New IPC8 SEARCH, DISPLAY, and SELECT fields in USPATFULL/
                  USPAT2
 NEWS  9  JAN 13  IPC 8 searching in IFIPAT, IFIUDB, and IFICDB
 NEWS 10  JAN 13  New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                  INPADOC
 NEWS 11  JAN 17  Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17  IPC 8 in the WPI family of databases including WPIFV
 NEWS 13  JAN 30  Saved answer limit increased
 NEWS 14  JAN 31  Monthly current-awareness alert (SDI) frequency
                  added to TULSA

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=> s gaissinsky?
L1           0 GAISSINSKY?

=> s (gaissinsky,?)
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search term.  If your search term contains a punctuation mark before
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implied proximity, the system may interpret the truncation symbol as
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fields indexed as single words, for example, the Basic Index.  To see
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SFIELDS" at an arrow prompt (=>).

=> s (gaissinsky, G?)
<------User Break------>

SEARCH ENDED BY USER

=> s (gaissinsky,G?)
<------User Break------>

SEARCH ENDED BY USER

=> s kopelov?
L2           3 KOPELOV?

=> d all 1-3

L2   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   1984:187020  CAPLUS
DN   100:187020
ED   Entered STN:  08 Jun 1984
TI   Effects of 12-O-tetradecanoylphorbol 13-acetate on fibroblasts from
     individuals genetically predisposed to cancer. Reply to comments
AU   Antecol, Michael H.; Mukherjee, Barid B.
CS   McGill Univ., Montreal, QC, H3A 1B1, Can.
SO   Cancer Research (1983), 43(11), 5624-6
     CODEN: CNREA8; ISSN: 0008-5472
DT   Journal
LA   English
CC   4-6 (Toxicology)
GI

/ Structure 1 in file .gra /

AB   A polemic in response to   ***Kopelovich***   (Cancer Research 1983, 43
     (11), 5623-4) is given on the effects of TPA (I)  [16561-29-8] on
     fibroblasts isolated from individuals genetically predisposed to cancer.
     The authors refute the argument based on differences in material and
```

methodol. used. In general, the authors disagree with the contention that a tumor promoting agent is sufficient or necessary to discriminate between fibroblasts from normal individuals and from those genetically predisposed to cancer.

ST TPA fibroblast cancer human polemic
IT Fibroblast
(neoplasm, TPA effect on, in humans)
IT 16561-29-8
RL: BIOL (Biological study)
(neoplasm in human fibroblast response to)

L2 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1984:187019 CAPLUS
DN 100:187019
ED Entered STN: 08 Jun 1984
TI Effects of 12-O-tetradecanoylphorbol 13-acetate on fibroblasts from individuals genetically predisposed to cancer. Comments
AU Kopelovich, Levy
CS Mem. Sloan-Kettering Cancer Cent., New York, NY, 10021, USA
SO Cancer Research (1983), 43(11), 5623-4
CODEN: CNREA8; ISSN: 0008-5472
DT Journal
LA English
CC 4-6 (Toxicology)
GI

/ Structure 2 in file .gra /

AB A polemic. A contention is made by ***Kopelovich*** that the differences between his results and those of Antecol and Mukherjee (Cancer Research 1982, (42), 3870-9) may be the differences in materials and methodol. The studies in question were on the effects of TPA (I) [16561-29-8] on fibroblasts from individuals genetically predisposed to cancer.

ST TPA fibroblast cancer human polemic
IT Fibroblast
(neoplasm, TPA effect on, of humans)
IT 16561-29-8
RL: BIOL (Biological study)
(neoplasm in human fibroblast response to)

L2 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1966:101298 CAPLUS
DN 64:101298
OREF 64:18993g-h
ED Entered STN: 22 Apr 2001
TI Apparatus for the control and regulation of the final stages of sintering an agglomerate
AU Fedorovskii, N. V.; Astakhov, A. G.; Pleskach, V. I.; Ososkov, B. A.
SO Met. i Gornorudn. Prom. (1966), (1), 13-16
DT Journal
LA Russian
CC 16 (Apparatus, Plant Equipment, and Unit Operations and Processes)
AB ***Kopelovich*** suggested use of the light emission from flying incandescent particles of the sinter in the last agglomerating vacuum chamber for the detn. of the end of sintering process during agglomeration (Byul. Tsentr. Nauch.- Issled. Inst. Chem. Met., Ser. 3 1961)). The authors developed an app. for the implementation of this principle. The app. elec. circuit diagram is described and shown. The app. uses an ir sensitive photodiode FD-3 with a source of alternating current (a.c.) and multiplier whereby the ir light given up by the incandescent particles (flying from the agglomerate at the end of sintering process) is measured and recorded.

IT Sintering
(under vacuum by light from flying incandescent particles, detn. of end of, app. for)

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=> s kopelov?/au
L3          120 KOPELOV?/AU

=> s (gaissinsky?/au
UNMATCHED LEFT PARENTHESIS '(GAISSINSKY'
The number of right parentheses in a query must be equal to the
number of left parentheses.

=> s gaissinsky?/au
L4            3 GAISSINSKY?/AU

=> s l3 and l4
L5            0 L3 AND L4

=> s (l4 or l3) and glass
         694654 GLASS
         134991 GLASSES
         724467 GLASS
                  (GLASS OR GLASSES)
L6            3 (L4 OR L3) AND GLASS

=> d all 1-3

L6   ANSWER 1 OF 3  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2000:868640  CAPLUS
DN   134:135244
ED   Entered STN:  13 Dec 2000
TI   Pigmenting of   ***glasses***   by ionizing gamma-radiation
AU   Kopelev, S.; Kopelev, V.;   ***Gaissinsky, G.***
CS   The Technological Incubator "Kinarot" D.N.Jordan Valley, Zemach, 15132,
     Israel
SO   Scientific Israel--Technological Advantages (2000), 2(2), 61-63
     CODEN: SITAFG; ISSN: 1565-1533
PB   Polymate Ltd., Israeli Research Center
DT   Journal
LA   English
CC   57-1 (Ceramics)
AB   The nature of radiation pigmentation of achromatic optical   ***glasses***
     to amber color was investigated.  Iron sulfide (FeS) was assumed to serve
     as the amber chromophore.
ST   coloring optical   ***glass***   ionizing gamma radiation amber
IT   Chromophores
        (amber; radiation pigmentation of achromatic optical   ***glasses***
        to amber color using ionizing gamma radiation)
IT   Coloring
     Gamma ray
        (radiation pigmentation of achromatic optical   ***glasses***   to
        amber color using ionizing gamma radiation)
IT   Optical   ***glass***
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
     (Technical or engineered material use); PROC (Process); USES (Uses)
        (radiation pigmentation of achromatic optical   ***glasses***   to
        amber color using ionizing gamma radiation)
RE.CNT  7     THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; Crystal Impressions
(2) Appen, A; Chemistry of glass 1970
(3) Borgman, V; Radiation pigmentation of crystal J 1984, 2
(4) Brehhovskih, S; Radiation effects in glasses 1982
(5) Burgess, C; Spectrophotometry, Luminescence and Color: Science and
    Complience Elsevier Science 1995
(6) Kozik, I; Glass pigmentation Moscow 1983
(7) Mully, G; The Architect of Indians Nuclear Programme 1993

L6   ANSWER 2 OF 3  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2000:868638  CAPLUS
DN   134:135243
ED   Entered STN:  13 Dec 2000
TI   About modification of zinc-sulfide   ***glasses***   composition
AU     ***Gaissinsky, G.***   ; Kopelev, S.; Kopelev, V.
CS   The Technological Incubator "Kinarot" D.N.Jordan Valley, Zemach, 15 132,
     Israel
```

SO   Scientific Israel--Technological Advantages (2000), 2(2), 49-52
     CODEN: SITAFG; ISSN: 1565-1533
PB   Polymate Ltd., Israeli Research Center
DT · Journal
LA   English
CC   57-1 (Ceramics)
AB   An industral zinc-sulfide ***glass*** compn. (i.e. striking ***glass*** pigmented by sulfides of zinc and iron) was modified by partial substitution of zinc oxide by magnesium oxide. The compn. modification preference was dictated by the results of examn. of the interaction of Zn2+ and Mg2+ cations in ***glass*** . The nature of this interaction was affirmed by the evaluation of Zn2+ ion diffusion in sodium zinc magnesium silicate ***glasses*** . The modified ***glass*** was proved to manifest stronger disposition to opacity in comparison with industrial ***glass*** .
ST   zinc sulfide striking silicate ***glass*** compn magnesia substituent; coloring silicate ***glass*** zinc sulfide striking magnesia substitution
IT   Coloring
        (modification of zinc-sulfide pigment striking silicate ***glass*** compns. by part substitution of zinc oxide with magnesium oxide)
IT   Silicate ***glasses***
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
        (sodium zinc magnesium silicate; modification of zinc-sulfide pigment striking silicate ***glass*** compns. by part substitution of zinc oxide with magnesium oxide)
IT   Silicate ***glasses***
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
        (sodium zinc silicate; modification of zinc-sulfide pigment striking silicate ***glass*** compns. by part substitution of zinc oxide with magnesium oxide)
IT   1309-48-4, Magnesium oxide, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (substituent additive; modification of zinc-sulfide pigment striking silicate ***glass*** compns. by part substitution of zinc oxide with magnesium oxide)
IT   1314-13-2, Zinc oxide, uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (substitution of; modification of zinc-sulfide pigment striking silicate ***glass*** compns. by part substitution of zinc oxide with magnesium oxide)
RE.CNT 12   THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Ahn, J; The Third Int'l Conf Nucl Reprocess 1991
(2) Appen, A; Chemistry of glass L 1970
(3) Bach, H; Analysis of the composition and structure of Glass and Glass Ceramics 1999, V16
(4) Edward, N; Honolulu 1993
(5) Elliot, R; Atomic Diffusion in Disordered Materials: Theory and Applications 1997
(6) Evstropiev, K; Diffusion processes in glass L 1970
(7) Frishat, G; Ionic Diffusion of Oxide Glasses 1975
(8) Lanzety, A; Manufacture of art glass M 1987
(9) Pindi, S; J Electrochem, Soc 1997, V144, P4022
(10) Schemba, M; Annales de Physique 1956, V1, P959
(11) Sokolov, A; J Non-Cryst Solids 1998, V190, P235
(12) Tanaka, K; Journal of thr Japan Society of Powder and Powder Metallurgy 1995, V42(1), P55 CAPLUS

L6   ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1940:3486 CAPLUS
DN   34:3486
OREF 34:545c-d
ED   Entered STN: 16 Dec 2001
TI   Determination of dry residue in shoe dressings
AU   Kofman, P. S.; ***Kopelovich, P. S.***
SO   Kozhevenno-Obuvnaya Promyshlennost SSSR (1939), 18(No. 3), 19
     CODEN: KOPSAX; ISSN: 0375-9288
DT   Journal
LA   Unavailable

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CC   13 (Chemical Industry and Miscellaneous Industrial Products)
AB   A sample of the shoe dressing is carefully spread out by rubbing between
     two 9 .times. 12 cm. weighed   ***glass***   plates, the plates are then
     weighed and dried in an oven at 100-150.degree..  If the dry residue is
     30-40% or higher a 1.5-2-g. sample should be used, if 15-30% a
     0.75-1.5-g., and if 10-15% a 0.2-0.75-g.  Differences between detns. do
     not exceed 0.2% and the accuracy is sufficient for control work.
IT   Shoe dressings
        (dry residue in, detn. of)


=> d his

     (FILE 'HOME' ENTERED AT 12:22:52 ON 17 FEB 2006)

     FILE 'CAPLUS' ENTERED AT 12:22:57 ON 17 FEB 2006
L1            0 S GAISSINSKY?
L2            3 S KOPELOV?
L3          120 S KOPELOV?/AU
L4            3 S GAISSINSKY?/AU
L5            0 S L3 AND L4
L6            3 S (L4 OR L3) AND GLASS

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                                                        ENTRY    SESSION
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Do you wish to use the same loginid and password?
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PASSWORD:
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 NEWS  3  DEC 05  CASREACT(R) - Over 10 million reactions available
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 NEWS  5  DEC 14  2006 MeSH terms loaded for MEDLINE file segment of TOXCENTER
 NEWS  6  DEC 14  CA/CAplus to be enhanced with updated IPC codes
 NEWS  7  DEC 21  IPC search and display fields enhanced in CA/CAplus with the
                  IPC reform
 NEWS  8  DEC 23  New IPC8 SEARCH, DISPLAY, and SELECT fields in USPATFULL/
                  USPAT2
 NEWS  9  JAN 13  IPC 8 searching in IFIPAT, IFIUDB, and IFICDB
 NEWS 10  JAN 13  New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                  INPADOC
 NEWS 11  JAN 17  Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17  IPC 8 in the WPI family of databases including WPIFV
 NEWS 13  JAN 30  Saved answer limit increased
 NEWS 14  JAN 31  Monthly current-awareness alert (SDI) frequency
                  added to TULSA

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               CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
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=> s color and (center or centre) and glass?
        407330 COLOR
         43436 COLORS
        429220 COLOR
                 (COLOR OR COLORS)
        286929 CENTER
        148420 CENTERS
        394786 CENTER
                 (CENTER OR CENTERS)
          1688 CENTRE
           564 CENTRES
          2244 CENTRE
                 (CENTRE OR CENTRES)
        760902 GLASS?
L1        1530 COLOR AND (CENTER OR CENTRE) AND GLASS?

=> s (grating or hologra?)
         32117 GRATING
         18958 GRATINGS
         37731 GRATING
                 (GRATING OR GRATINGS)
         18220 HOLOGRA?
         16418 HOLOG
            14 HOLOGS
         16420 HOLOG
                 (HOLOG OR HOLOGS)
         21290 HOLOGRA?
                 (HOLOGRA? OR HOLOG)
L2       53928 (GRATING OR HOLOGRA?)

=> s l1 and l2
L3          41 L1 AND L2

=> d all 1-41

L3   ANSWER 1 OF 41  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:680344  CAPLUS
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ED   Entered STN:  01 Aug 2005
TI   Electron gun for cathode ray tube
IN   Choi,  Jin Yeal
PA   Lg Electronics Inc., S. Korea
SO   Repub. Korea, No pp. given
     CODEN: KRXXFC
DT   Patent
LA   Korean
IC   ICM  H01J029-48
FAN.CNT 1
     PATENT NO.          KIND   DATE          APPLICATION NO.        DATE
     ---------------     ----   --------      --------------------   --------
PI   KR 224978            B1    19991015      KR 1997-31512          19970708
PRAI KR 1997-31512              19970708
CLASS
 PATENT NO.       CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------   -----  ----------------------------------------------------
 KR 224978        ICM    H01J029-48
                  IPCI   H01J0029-48 [ICM,7]
AB   PURPOSE: An electron gun for   ***color***   cathode ray tube is provided
     to reduce a mis-convergence by forming a   ***grating***   groove around a
       ***center***   beam passing hole of a rim portion of a shield cup to
     divide a size of the shield cup.  CONSTITUTION: A tripolar portion, a main
     lens portion, and a shield cup(101) are formed sequentially according a
     constant interval by a bead   ***glass***   .  The shield cup is formed
     with a bottom portion(102) and a rim portion(103).  A   ***grating***
     groove(106) is formed around a   ***center***   beam passing hole(104) of
     the rim portion(103).  A shape of the   ***grating***   groove(106) is a
     polygon or a curve type.  A depth of the   ***grating***   groove(106) is
     1/2 to 1/5 of the thickness of the shield cup(101).

L3   ANSWER 2 OF 41  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:454993  CAPLUS
DN   143:294265
ED   Entered STN:  29 May 2005
TI   Mechanisms and applications of femtosecond laser induced nanostructures
AU   Qiu, Jianrong; Shimotsuma, Yasuhiko; Miura, K.; Kazansky, Peter; Hirao,
     Kazuyuki
CS   Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of
     Sciences and Japan Science and Technology Agency, Shanghai, 201800, Peop.
     Rep. China
SO   Proceedings of SPIE-The International Society for Optical Engineering
     (2005), 5713(Photon Processing in Microelectronics and Photonics IV),
     137-147
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal; General Review
LA   English
CC   73-0 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
AB   A review.  Femtosecond laser has been widely used in microscopic
     modifications to materials due to its ultra-short laser pulse and
     ultrahigh light intensity.  When a transparent material e.g.   ***glass***
     is irradiated by a tightly focused femtosecond laser, the photo-induced
     reaction is expected to occur only near the focused part of the laser beam
     inside the   ***glass***   due to the multiphoton processes.  We obsd.
     various induced localized microstructures e.g.   ***color***
       ***center***   defects, refractive index change, micro-void and
     micro-crack, in   ***glasses***   after the femtosecond laser irradn., and
     discussed the possible applications of the microstructures in the
     fabrication of various micro-optical components, e.g. optical waveguide,
     micro-  ***grating***   , micro-lens, fiber attenuator, 3-dimensional
     optical memory.  In this paper, we review our recent investigations on
     single femtosecond laser-beam induced nanostructures.  We introduce the
     space-selective nanoscale valence state manipulation of active ions, pptn.
     and control of metal nanoparticles and observation of polarization-
     dependent permanent nanostructures, and discuss the mechanisms and
     possible applications of the obsd. phenomena.
ST   femtosecond laser induced nanostructure mechanism application review
IT   Lasers
        (femtosecond; mechanisms and applications of various femtosecond
        laser-induced nanostructures in   ***glasses***   )
```

IT Nanostructures
(mechanisms and applications of various femtosecond laser-induced nanostructures in ***glasses***)
IT ***Glass*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(mechanisms and applications of various femtosecond laser-induced nanostructures in ***glasses***)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Chickov, B; Appl Phys A 1996, V63, P109
(2) Davis, K; Opt Lett 1996, V21, P1729 CAPLUS
(3) Glezer, E; Appl Phys Lett 1997, V71, P882 CAPLUS
(4) Glezer, E; Opt Lett 1996, V21, P2023 CAPLUS
(5) Misawa, H; Japanese Patent Application No 023614 1995
(6) Pronko, P; Opt Commun 1995, V114, P106 CAPLUS
(7) Qiu, J; Appl Phys Lett 1998, V73, P1963
(8) Qiu, J; Appl Phys Lett 2001, V79, P3567 CAPLUS
(9) Qiu, J; Jpn J Appl Phys 1998, V37, P2263 CAPLUS

AN 2005:272091 CAPLUS
DN 144:117016
ED Entered STN: 30 Mar 2005
TI Through a ***glass*** , darkly: point defect production by ultrafast laser irradiation of alkali-containing silica ***glasses*** and alkali halide single crystals
AU Avanesyan, Sergey M.; Orlando, Stefano; Langford, Steve C.; Dickinson, J. Thomas
CS Phys. Dep., Washington State Univ., Pullman, WA, 99164-2814, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2005), 5647(Laser-Induced Damage in Optical Materials: 2004), 501-512
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We probed the evolution of ***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride on time scales from microseconds to hundreds of seconds. By using an appropriately chosen probe laser focused through the femtosecond laser spot, we followed the changes in coloration due to individual or multiple femtosecond pulses, and followed the evolution of that coloration for long times after femtosecond laser radiation was terminated. For the soda lime ***glass*** , the decay of ***color*** ***centers*** is well described in terms of bimol. annihilation reactions between electron and hole ***centers*** . Similar processes are also occurring in single crystal sodium chloride. Finally, we report fabrication of permanent periodic patterns in soda lime ***glass*** by two time coincident femtosecond laser pulses.
ST point defect laser irradn soda lime ***glass*** sodium chloride; ***color*** ***center*** annihilation electron hole reaction; periodic pattern soda lime ***glass*** two laser pulse
IT ***Color*** ***centers***
(V; ***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride)
IT Electron-hole recombination
(annihilation of ***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride by)
IT ***Color*** ***centers***
Optical transmission
UV and visible spectra
(***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride)
IT Soda-lime ***glasses***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(***color*** ***centers*** produced by femtosecond laser

radiation in soda lime ***glass*** and single crystal sodium chloride)
IT Diffraction ***gratings***
(fabrication of permanent periodic patterns in soda lime ***glass*** by two time coincident femtosecond laser pulses)
IT Laser radiation
(pulsed; ***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride)
IT 7647-14-5, Sodium chloride, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(***color*** ***centers*** produced by femtosecond laser radiation in soda lime ***glass*** and single crystal sodium chloride)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anon; Physics of Color Centers 1968
(2) Bloembergen, N; Rev Mod Phys 1999, V71, PS283 CAPLUS
(3) Cohen, A; Phys Stat Solidi (a) 1983, V77, P619 CAPLUS
(4) Dupree, R; J Non-Cryst Solids 1986, V81, P185 CAPLUS
(5) Efimov, O; J Non-Cryst Solids 1999, V253, P58 CAPLUS
(6) Greaves, G; Nature 1981, V293, P611 CAPLUS
(7) Huang, C; J Chem Phys 1990, V93, P8180 CAPLUS
(8) Itoh, N; Adv Phys 1982, V31, P491 CAPLUS
(9) Itoh, N; Materials Modification by Electronic Excitation 2000
(10) Kawamura, K; Appl Phys Lett 2001, V79, P1228 CAPLUS
(11) Kurobori, T; Radiation Measurements 2004, V38, P759 CAPLUS
(12) Li, Y; Appl Phys Lett 2002, V80, P1508 CAPLUS
(13) Lonzaga, J; J Appl Phys 2003, V97, P4332
(14) Mackey, J; J Phys Chem Solids 1966, V27, P1759 CAPLUS
(15) Mitra, S; Philos Mag B 1983, V48, P151 CAPLUS
(16) Murray, R; J Non-Cryst Solids 1987, V94, P144 CAPLUS
(17) Newell, R; J Mater Res 1989, V4, P434 CAPLUS
(18) Seitz, F; Rev Mod Phys 1954, V26, P7 CAPLUS
(19) Sigel, G; J Non-Cryst Solids 1973-1974, V13, P372
(20) Sonder, E; Point Defects in Solids 1972, P201 CAPLUS
(21) Soules, T; J Chem Phys 1979, V71, P4570 CAPLUS
(22) Zumofen, G; J Chem Phys 1986, V84, P6679 CAPLUS

L3 ANSWER 4 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:956533 CAPLUS
DN 142:44913
ED Entered STN: 11 Nov 2004
TI Nano-processing of transparent materials by interference femtosecond lase pulses
AU Kawamura, Ken-ichi; Kamioka, Hayato; Miura, Taisuke
CS JST/ERATO, Kawasaki, Kanagawa, 213-0012, Japan
SO Optronics (2004), 274, 157-165
CODEN: OPUTDD; ISSN: 0286-9659
PB Oputoronikususha
DT Journal; General Review
LA Japanese
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 66, 74
AB A review. Processing of transparent materials using IR and UV femtosecond (fs) laser pulses is discussed. Micrograting structures can be ***holog*** . encoded in transparent materials by interference IR fs laser pulses on the surface and inside the transparent materials. Nanosized structures can be encoded probably due to the optical non-linear effect with a aid of laser induced material structural changes. The fringe spacing of the ***gratings*** is reduced down to 290 nm using UV laser instead of IR laser. Further, two-dimensional periodic nano-structures by a double exposure technique and the fabrication of a distributed feedback laser in a LiF single crystal are demonstrated.
ST review nano processing transparent material ***holograph*** ***grating*** laser
IT Solid state lasers
(LiF ***color*** ***center*** DFB laser fabrication)
IT Nanostructures
Transparent materials

(nano-processing of transparent materials by interference femtosecond lase pulses)
IT ***Holography***
(nano-processing of transparent materials by interference femtosecond lase pulses for)
IT Nonlinear optical properties
(nano-processing of transparent materials by interference femtosecond lase pulses in relation to)
IT Light sources
(nano-processing of transparent materials for fabrication of)
IT Technology
(nanotechnol.; nano-processing of transparent materials by interference femtosecond lase pulses)
IT Diffraction ***gratings***
(silicate ***glass*** ***gratings*** formed by interference femtosecond lase pulses)
IT Silicate ***glasses***
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(silicate ***glass*** ***gratings*** formed by interference femtosecond lase pulses)
IT 7789-24-4, Lithium fluoride (LiF), uses
RL: DEV (Device component use); USES (Uses)
(LiF ***color*** ***center*** DFB laser fabrication)
IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(silicate ***glass*** ***gratings*** formed by interference femtosecond lase pulses)

L3 ANSWER 5 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:949253 CAPLUS
DN 141:402408
ED Entered STN: 10 Nov 2004
TI Nanoprocessing of transparent materials with single interference femtosecond laser pulse
AU Kawamura, Kenichi; Hirano, Masahiro; Kamiya, Toshio; Hosono, Hideo
CS Japan Sci. Technol. Agency, ERATO, Japan
SO Hikari Araiansu (2004), 15(11), 41-45
CODEN: HARAEW; ISSN: 0917-026X
PB Nippon Kogyo Shuppan K.K.
DT Journal; General Review
LA Japanese
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A review, on the studies about materials micromachining by utilization of coherent property of femtosecond (fs) laser beams. Introduced here are the fs laser single-pulse coherent exposure, laser writing of silica ***glass*** for forming surface-relief ***holograms*** , fabrication of DFB-type ***color*** ***center*** lasers, etc.
ST review nanoprocessing transparent material laser pulse; femtosecond laser nanoprocessing silica ***glass*** review; lithium fluoride distributed Bragg laser nanoprocessing review
IT Lasers
(distributed feedback lasers; nanoprocessing of transparent materials with single interference femtosecond laser pulse)
IT ***Color*** ***centers***
(formation by laser pulse; nanoprocessing of transparent materials with single interference femtosecond laser pulse)
IT Machining
(laser, pulsed; nanoprocessing of transparent materials with single interference femtosecond laser pulse)
IT ***Holographic*** diffraction ***gratings***
Transparent materials
(nanoprocessing of transparent materials with single interference femtosecond laser pulse)
IT Laser radiation
(pulsed; nanoprocessing of transparent materials with single interference femtosecond laser pulse)
IT 7789-24-4, Lithium fluoride, processes 60676-86-0
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(nanoprocessing of transparent materials with single interference femtosecond laser pulse)

L3 ANSWER 6 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:902965 CAPLUS
DN 143:142202
ED Entered STN: 29 Oct 2004
TI Fabrication of nanograting inside transparent materials by using a single femtosecond laser beam
AU Shimotsuma, Yasuhiko; Qiu, Jianrong; Kazansky, Peter G.; Hirao, Kazuyuki
CS Dep. Mater. Chem., Grad. Sch. Eng., Kyoto Univ., Kyoto, 615-8510, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5662(Fifth International Symposium on Laser Precision Microfabrication, 2004), 173-178
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Femtosecond laser is under intense study as a new laser processing tool which can induce refractive index change and ***color*** ***center*** , etc. inside of transparent materials. Here, the authors report on the 1st observation of the formation of polarization-dependent nano- ***grating*** by irradn. of only single femtosecond laser beam inside SiO2 ***glasses*** . This nano- ***grating*** was formed by the self-organization at intervals of 200 nm of generated O defect in the laser focal point. The direction of nano- ***grating*** was controllable by laser polarization direction. Addnl., the periodicity was variable according to the irradn. laser light of energy and pulse no. The authors proposed a mechanism of this novel phenomenon contg. the interference between the laser light (photon) and the generated plasma wave on the focal point.
ST fabrication nano ***grating*** transparent material laser radiation
IT ***Color*** ***centers***
Refractive index
(changes in; fabrication of nanograting inside transparent materials by using a single femtosecond laser beam)
IT Laser radiation
Light scattering
Optical diffraction
Transparent materials
(fabrication of nanograting inside transparent materials by using a single femtosecond laser beam)
IT Diffraction ***gratings***
(nano-; fabrication of nanograting inside transparent materials by using a single femtosecond laser beam)
IT Crystal defects
(oxygen; fabrication of nanograting inside transparent materials by using a single femtosecond laser beam)
IT 60676-86-0, Vitreous silica
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(fabrication of nanograting inside transparent materials by using a single femtosecond laser beam)
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Ashkenasi, D; Appl Phys Lett 1998, V72, P1442 CAPLUS
(2) Bricchi, E; Opt Lett 2004, V29, P119
(3) Brueck, S; Phys Rev Lett 1982, V48, P1678 CAPLUS
(4) Chan, J; Opt Lett 2001, V26, P1726 CAPLUS
(5) Chichkov, B; Appl Phys A 1996, V63, P109
(6) Davis, K; Opt Lett 1996, V21, P1729 CAPLUS
(7) Furusawa, K; J Appl Phys 2000, V87, P1604 CAPLUS
(8) Glezer, E; Opt Lett 1996, V21, P2023 CAPLUS
(9) Hirao, K; J Non-Cryst Solids 1998, V239, P91 CAPLUS
(10) Kazansky, P; Phys Rev Lett 1999, V82, P2199 CAPLUS
(11) Mills, J; Appl Phys Lett 2002, V81, P196 CAPLUS
(12) Minoshima, K; Opt Lett 2001, V26, P1516
(13) Miura, K; Appl Phys Lett 1997, V71, P3329 CAPLUS
(14) Miura, K; Nuclear Instruments and Methods in Physics Research B 1998, V141, P726 CAPLUS
(15) Qiu, J; Appl Phys Lett 1999, V74, P10 CAPLUS
(16) Qiu, J; Appl Phys Lett 2000, V77, P1940 CAPLUS
(17) Qiu, J; Opt Lett 1999, V24, P786 CAPLUS

(18) Qiu, J; Solid State Commun 1999, V113, P341 CAPLUS
(19) Sun, H; J Phys Chem B 2000, V104, P3450 CAPLUS
(20) Varel, H; Appl Phys A 1997, V65, P367 CAPLUS

L3 ANSWER 7 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:768240 CAPLUS
DN 142:419545
ED Entered STN: 21 Sep 2004
TI Femtosecond laser-induced microstructures in ***glasses*** and applications in micro-optics
AU Qiu, Jianrong
CS Photon Craft Project, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences and Japan Science and Technology Agency, Kyoto, 619-0237, Japan
SO Chemical Record (2004), 4(1), 50-58
CODEN: CRHEAK; ISSN: 1527-8999
PB John Wiley & Sons, Inc.
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Femtosecond laser was widely used in microscopic modifications to materials due to its ultra-short laser pulse and ultrahigh light intensity. When a transparent material e.g. ***glass*** is irradiated by a tightly focused femtosecond laser, the photo-induced reaction is expected to occur only near the focused part of the laser beam inside the ***glass*** due to the multiphoton processes. The authors obsd. various induced structures e.g. ***color*** ***center*** defects, refractive index change, micro-void and micro-crack, in ***glasses*** after the femtosecond laser irradn. The authors review the femtosecond laser induced phenomena and discuss the mechanisms of the obsd. phenomena. The authors also introduce the fabrication of various micro-optical components, e.g. optical waveguide, micro- ***grating*** , micro-lens, fiber attenuator, 3-dimensional optical memory by using the femtosecond laser-induced structures. The femtosecond laser will open new possibilities in the fabrication of micro-optical components with various optical functions.
ST laser radiation microstructure ***glass*** micro optics
IT Optical properties
(attenuation; femtosecond laser-induced microstructures in ***glasses*** and applications in micro-optics)
IT Refractive index
(change in; femtosecond laser-induced microstructures in ***glasses*** and applications in micro-optics)
IT ***Color*** ***centers***
Crack (fracture)
Diffraction ***gratings***
Laser radiation
Lenses
Microstructure
Optical fibers
Optical waveguides
Transparent materials
Voids (structures)
(femtosecond laser-induced microstructures in ***glasses*** and applications in micro-optics)
IT ***Glass*** , properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(femtosecond laser-induced microstructures in ***glasses*** and applications in micro-optics)
RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chickov, B; Appl Phys A 1996, V63, P109
(2) Davis, K; Opt Lett 1996, V21, P1729 CAPLUS
(3) Glezer, E; Opt Lett 1996, V21, P2023 CAPLUS
(4) Hill, K; Appl Phys Lett 1987, V32, P647
(5) Hirao, K; Ceramics Japan 1995, V30, P689
(6) Homoelle, D; Opt Lett 1999, V24, P1311 CAPLUS
(7) Jiang, N; Appl Phys Lett 2000, V77, P3956 CAPLUS
(8) Jiang, N; Appl Phys Lett 2002, V80, P2005 CAPLUS

(9) Jiang, N; Phys Rev 2003, V68, P64207
(10) Jiang, N; Phys Rev B 2002, V60, P2263
(11) Kawamura, K; Appl Phys Lett 2001, V78, P1038 CAPLUS
(12) Kondo, Y; Jpn J Appl Phys 1999, V38, PL1146 CAPLUS
(13) Minoshima, K; Opt Lett 2001, V26, P1516
(14) Misawa, H; Japanese Patent Application No 023614 1995
(15) Miura, K; Appl Phys Lett 1997, V71, P3329 CAPLUS
(16) Miura, K; Appl Phys Lett 2002, V80, P2263 CAPLUS
(17) Miura, K; Opt Lett 2000, V25, P408 CAPLUS
(18) Pronko, P; Opt Commun 1995, V114, P106 CAPLUS
(19) Qiu, J; Appl Phys Lett 1997, V71, P43 CAPLUS
(20) Qiu, J; Appl Phys Lett 1997, V71, P759 CAPLUS
(21) Qiu, J; Appl Phys Lett 1999, V74, P10 CAPLUS
(22) Qiu, J; Appl Phys Lett 2001, V79, P3567 CAPLUS
(23) Qiu, J; Appl Phys Lett 2002, V81, P3040 CAPLUS
(24) Qiu, J; Jpn J Appl Phys 1998, V37, P2263 CAPLUS
(25) Qiu, J; Opt Lett 1999, V24, P786 CAPLUS
(26) Qiu, J; Opt Lett in press
(27) Qiu, J; Solid State Commun 1998, V106, P795 CAPLUS
(28) Qiu, J; Solid State Commun 2000, V113, P341
(29) Shikorski, Y; Electron Lett 2000, V36, P226
(30) Shimotsuma, Y; Phys Rev Lett 2003, V91, P247405
(31) Si, J; Appl Phys Lett 2000, V77, P3887 CAPLUS
(32) Si, J; Appl Phys Lett 2002, V80, P359 CAPLUS
(33) Streltsov, A; Opt Lett 2001, V26, P42 CAPLUS
(34) Stuart, C; Phys Rev Lett 1995, P2248
(35) Sun, H; Opt Lett 2001, V26, P325 CAPLUS
(36) Zverev, G; Sov Phys JETP 1970, V30, P616

L3 ANSWER 8 OF 41 CAPLUS
AN 2004:678684 CAPLUS
DN 143:34177
ED Entered STN: 20 Aug 2004
TI Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation
AU Pissadakis, Stavros; Ikiades, Aris; Hua, Ping; Sheridan, Anna K.; Wilkinson, James S.
CS Institute of Electronic Structure and Laser, Foundation for Research and Technology - Hellas, Heraklion, 71 110, Greece
SO Optics Express (2004), 12(14), 3131-3136
CODEN: OPEXFF; ISSN: 1094-4087
URL: http://www.opticsexpress.org/view_file.cfm?doc=%24%29%3C%3B%2DKP%20%20%0A&id=%24%2A%2C%23%28K%40%20%20%0A
PB Optical Society of America
DT Journal; (online computer file)
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The photosensitivity to 248nm excimer laser radiation of Er-doped Schott IOG-1 phosphate ***glass*** is presented. The photosensitive mechanism is investigated by employing a ***grating*** recording process. Index changes of up to .apprx.2.0.times.10-3 were measured in silver ion-exchanged samples using diffraction efficiency measurements; whereas changes of only .apprx.10-5 were measured for non-ion-exchanged samples. Absorption measurements allowed the identification of specific ***color*** ***center*** bands, which were attributed to the ***glass*** matrix and to the silver ions. Investigation of the exposed ion-exchanged ***glass*** using SEM and energy dispersive x-ray microanal. revealed that in addn. to the ***color*** ***centers*** formed, silver ion migration and ionization contribute significantly to the UV-induced index changes.
ST photosensitivity ion exchanged erbium doped phosphate ***glass*** ; ***color*** ***center*** band reflectivity index silver ion
IT Absorption spectra
(Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation)
IT Phosphate ***glasses***
RL: PRP (Properties)
(Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation)
IT 7440-52-0, Erbium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)

(Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation)
IT 7631-99-4, Sodium nitrate, properties 7761-88-8, Silver nitrate, properties
RL: PRP (Properties)
(Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation)
IT 7440-22-4, Silver, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(dopant; Photosensitivity of ion-exchanged Er-doped phosphate ***glass*** using 248nm excimer laser radiation)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; Holographic recording materials 1977, V20
(2) Blaize, S; IEEE Photon Technol Lett 2003, V15, P516
(3) Chan, J; Appl Phys Lett 2003, V82, P2371 CAPLUS
(4) Hwang, B; Electron Lett 1999, V35, P1007 CAPLUS
(5) Pissadakis, S; J Appl Phys 2004, V95, P1634 CAPLUS
(6) Thamboon, P; J Appl Phys 2003, V93, P32 CAPLUS
(7) Veasey, D; J Non-Cryst Solids 2000, V263-264, P369
(8) Watanabe, Y; Appl Phys Lett 2001, V78, P2125 CAPLUS
(9) Watanabe, Y; J Appl Phys 1998, V84, P6457 CAPLUS

L3 ANSWER 9 OF 41 CAPLUS
AN 2004:364957 CAPLUS
DN 141:303772
ED Entered STN: 05 May 2004
TI Nano-fabrication of optical devices in transparent dielectrics: volume ***gratings*** in SiO2 and DFB ***color*** ***center*** laser in LiF
AU Kawamura, Ken-ichi; Takamizu, Daizyu; Kurobori, Toshio; Kamiya, Toshio; Hirano, Masahiro; Hosono, Hideo
CS Exploratory Research for Advanced Technology (ERATO), Hosono Transparent Electro-Active Materials (TEAM), Project Japan Science and Technology, Takatsu-ku, Kawasaki, 213-0012, Japan
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2004), 218, 332-336
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Refractive index-modulated vol.-type ***gratings*** were ***holog*** . encoded inside pure SiO2 ***glass*** and LiF crystals by a single chirped laser pulse generated from a mode-locked Ti:sapphire laser (wavelength .apprx.800 nm, emission pulse duration .apprx.100 fs). The present technique provides a fast method applicable for encoding vol.-type ***gratings*** inside any nonphotosensitive transparent dielec. materials such as SiO2 ***glass*** and sapphire. As an application of the ***holog*** . encoding method, distributed feedback laser structure was fabricated in a LiF single-crystal using the ***gratings*** thus encoded, which demonstrated room-temp. F2- ***color*** ***center*** lasing.
ST vol ***grating*** silica lithium fluoride laser nanofabrication
IT Lasers
(distributed feedback, ***color*** ***center*** ; nano-fabrication of lithium fluoride)
IT Optical modulation
Refractive index
(nano-fabrication of vol. ***gratings*** in silica and distributed feedback ***color*** ***center*** laser in lithium fluoride in relation to)
IT Diffraction ***gratings***
(vol.; nano-fabrication of silica)
IT 7789-24-4, Lithium fluoride, uses
RL: DEV (Device component use); USES (Uses)
(nano-fabrication of distributed feedback ***color*** ***center*** laser in)
IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(nano-fabrication of vol. ***gratings*** in)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Basiev, T; IEEE J Quant Electron 1988, V24, P1052 CAPLUS
(2) Davis, M; Opt Lett 1996, V21, P1729
(3) Devine, R; Phys Rev B 1987, V35, P2560 CAPLUS
(4) Glezer, E; Opt Lett 1996, V21, P2023 CAPLUS
(5) Gu, H; Opt Commun 1989, V70, P141 CAPLUS
(6) Gusev, Y; Bull Acad Sci USSR, Phys Ser 1980, V44, P15
(7) Kawamura, K; Appl Phys B 2000, V71, P119 CAPLUS
(8) Kawamura, K; Appl Phys Lett 2001, V78, P1038 CAPLUS
(9) Kawamura, K; Appl Phys Lett 2001, V81, P1137
(10) Kawamura, K; Appl Phys Lett 2001, V79, P1228 CAPLUS
(11) Kawamura, K; Jpn J Appl Phys 2000, V39, PL767 CAPLUS
(12) Kawamura, K; Rev Sci Instr 2002, V73, P1711 CAPLUS
(13) Lell, E; Progress in Ceramic Science 1996, V4
(14) Schaffer, C; Opt Lett 2001, V26, P93
(15) Stuart, B; J Opt Soc Am B 1996, V13, P459 CAPLUS
(16) Ter-Mikirtychev, V; Prog Quant Electr 1996, V20, P219 CAPLUS
(17) Tsuboi, T; Appl Opt 1994, V33, P982 CAPLUS
(18) Tsuboi, T; Appl Opt Commun 1985, V55, P277

AN 2003:741266 CAPLUS
DN 140:10529
ED Entered STN: 22 Sep 2003
TI ***Color*** ***center*** formation in soda-lime ***glass*** with femtosecond laser pulses
AU Lonzaga, J. B.; Avanesyan, S. M.; Langford, S. C.; Dickinson, J. T.
CS Physics Department, Washington State University, Pullman, WA, 99164-2814, USA
SO Journal of Applied Physics (2003), 94(7), 4332-4340
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB The authors show that exposure of soda-lime ***glass*** to ultrafast laser pulses at 800 nm causes coloration (darkening). The authors have characterized this coloring with time-resolved measurements of the transmission of 633 nm light through the ***glass*** during laser exposure. Reverse processes (partial bleaching) operate on time scales of .mu.s to seconds. The competition between coloration after the femtosecond pulse and the subsequent transmission recovery limits the darkening that can be achieved at a given femtosecond pulse energy and repetition rate. The response of soda-lime ***glass*** to 400 and 267 nm ultrafast pulses is quite similar, although much lower pulse energies are required for darkening. The authors argue that darkening is due to absorption processes that produce mobile charge carriers, which then interact to produce trapped hole ***centers*** (H+3) that absorb strongly at 633 nm. Trapped electrons (that form E ***centers***) are the likely cause of the accompanying loss of transmission in the near UV. Finally, the authors show that diffraction ***gratings*** can be rapidly and easily produced in this material using ***holog*** . methods.
ST ***color*** ***center*** ***holog*** diffraction ***grating*** soda lime ***glass***
IT Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(alkali metal silicate; formation of ***color*** ***centers*** in soda-lime ***glass*** and in other alkali silicate ***glasses***)
IT ***Color*** ***centers***
Electric current carriers
Electron traps
Hole traps
Holographic diffraction ***gratings***
Holographic recording materials
Trapping
(formation of ***color*** ***centers*** in soda-lime

glass with femtosecond laser pulses and ***holog*** . recording of diffraction ***gratings***)
IT Soda-lime ***glasses***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(formation of ***color*** ***centers*** in soda-lime ***glass*** with femtosecond laser pulses and ***holog*** . recording of diffraction ***gratings***)
IT Laser radiation
(pulsed, femtosecond; formation of ***color*** ***centers*** in soda-lime ***glass*** with femtosecond laser pulses and ***holog*** . recording of diffraction ***gratings***)
IT 1313-59-3, Sodium oxide, processes 12057-24-8, Lithium oxide, processes 12136-45-7, Potassium oxide, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(formation of ***color*** ***centers*** in soda-lime ***glass*** and in other alkali silicate ***glasses***)
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Cohen, A; Phys Status Solidi A 1983, V77, P619 CAPLUS
(2) Dawes, M; Appl Phys A: Mater Sci Process 1999, V69, PS547 CAPLUS
(3) Dickinson, J; J Appl Phys 1990, V68, P1831 CAPLUS
(4) Dickinson, J; J Appl Phys 1993, V74, P3758 CAPLUS
(5) Dupree, R; J Non-Cryst Solids 1986, V81, P185 CAPLUS
(6) Efimov, O; J Non-Cryst Solids 1999, V253, P58 CAPLUS
(7) Greaves, G; Nature (London) 1981, V293, P611 CAPLUS
(8) Griscom, D; J Non-Cryst Solids 1980, V40, P211 CAPLUS
(9) Huang, C; J Chem Phys 1990, V93, P8180 CAPLUS
(10) Jiang, H; Opt Express 2002, V10, P1244
(11) Kruger, J; Laser Phys 1999, V9, P30 CAPLUS
(12) Mackey, J; J Phys Chem Solids 1966, V27, P1759 CAPLUS
(13) Mitra, S; Philos Mag B 1983, V48, P151 CAPLUS
(14) Murray, R; J Non-Cryst Solids 1987, V94, P144 CAPLUS
(15) Newell, R; J Mater Res 1989, V4, P434 CAPLUS
(16) Scher, H; Phys Today 1991, V44, P26
(17) Schnorer, H; J Chem Phys 1990, V92, P2310
(18) Schnorer, H; J Chem Phys 1990, V93, P7148
(19) Shin, J; J Appl Phys 1996, V80, P7065 CAPLUS
(20) Shkrob, I; J Non-Cryst Solids 2000, V262, P35 CAPLUS
(21) Sigel, G; J Non-Cryst Solids 1973-1974, V13, P372
(22) Song, K; Self-Trapped Excitons 1993
(23) Soules, T; J Chem Phys 1979, V71, P4570 CAPLUS
(24) Stebbins, J; Nature (London) 1997, V390, P60 CAPLUS
(25) Webb, R; J Appl Phys 1993, V74, P2323 CAPLUS
(26) Zumofen, G; J Chem Phys 1985, V82, P3198 CAPLUS

L3 ANSWER 11 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:337939 CAPLUS
DN 139:150968
ED Entered STN: 05 May 2003
TI Sulphur-doped silica fibers

AU Gerasimova, V. I.; Rybaltovskii, A. O.; Chernov, P. V.; Mashinsky, V. M.; Sazhin, O. D.; Medvedkov, O. I.; Rybaltovskii, A. A.; Khrapko, R. R.
CS D.V. Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Moscow, 119992, Russia

SO Quantum Electronics (2003), 33(1), 90-94
CODEN: QUELEZ; ISSN: 1063-7818
PB Turpion Ltd.
DT Journal
LA English
CC 40-4 (Textiles and Fibers)
Section cross-reference(s): 73

AB An optical fiber with low optical losses is manufd. from a sulfur-doped quartz ***glass*** . Optical absorption spectra are measured for various parts of the fiber core. Most of the bands of these spectra are assigned to oxygen-deficient ***centers*** and ***color*** ***centers*** contg. sulfur atoms. The photosensitivity of ***glasses*** exposed to laser radiation at wavelengths of 193 and 244 nm is investigated to est. the possibility of their application for producing photorefracting devices. A Bragg ***grating*** of the refractive index with .DELTA.n = 7.8 .times. 10-4 is written in a

sulfur-doped silica fiber.
ST sulfur doped silica fiber quartz ***glass*** photorefractive device
IT Refractive index
(properties of sulfur-doped silica optical fibers)
IT Synthetic fibers
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(silica; sulfur-doped silica optical fibers)
IT Optical fibers
(sulfur-doped silica optical fibers)
IT 7631-86-9P, Silica, uses
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(quartz-type, core; sulfur-doped silica optical fibers)
IT 7704-34-9, Sulfur, uses
RL: MOA (Modifier or additive use); USES (Uses)
(sulfur-doped silica optical fibers)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Amosov, A; Phys Khim Stekla 1983, V9, P569 CAPLUS
(2) Askins, C; Defects SiO2 and Related Dielectrics 2000, V2, P391 CAPLUS
(3) Bilodeau, F; Opt Lett 1993, V18, P953 CAPLUS
(4) Dianov, E; Electron Lett 1997, V33, P1334 CAPLUS
(5) Dianov, E; Proc SPIE Int Soc Opt Eng 1994, V2425, P53 CAPLUS
(6) Gerasimova, V; Phys Khim Stekla 2002, V28, P8
(7) Gerasimova, V; Phys Khim Stekla 2002, V28, P89
(8) Golant, K; Proc SPIE Int Soc Opt Eng 2000, V4083, P2 CAPLUS
(9) Hand, D; Opt Lett 1990, V15, P102 CAPLUS
(10) Huber, K; Constants of Diatomic Molecules 1979
(11) Skuja, L; J Non-Cryst Solids 1998, V239, P16 CAPLUS
(12) Skuja, L; Solid State Commun 1984, V50, P1069 CAPLUS
(13) Sokolov, V; Volok Opt Mater Ustr 2000, 3, P35
(14) Sulimov, V; J Non-Cryst Solids 1995, V191, P260 CAPLUS
(15) Yu, L; Kvantovaya Elektron 2002, V32, P124
(16) Yu, L; Quantum Electron 2002, V32, P124
(17) Yu, Z; Phys Khim Stekla 2001, V27, P495

L3 ANSWER 12 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:240184 CAPLUS
DN 136:347894
ED Entered STN: 28 Mar 2002
TI Electrostriction mechanism of bragg ***grating*** formation in germanosilicate fibers

AU Neustruev, V. B.
CS Fiber Optics Research Center, General Physics Institute, Russian Academy of Sciences, Moscow, 119991, Russia

SO Quantum Electronics (2001), 31(11), 1003-1006
CODEN: QUELEZ; ISSN: 1063-7818
PB Turpion Ltd.
DT Journal
LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57

AB An electrostriction model is proposed for the photorefractive effect obsd. during the writing of Bragg ***gratings*** in germanosilicate fibers. Electrostriction is caused by a spatial charge ***grating*** formed upon the exposure to UV radiation. According to the est., the contribution of electrostriction to the photorefractive effect under real writing conditions is comparable with the contribution from ***color*** ***centers*** and exceeds the contribution from the electrooptical effect by more than an order of magnitude. The electrostriction model explains the prodn. of the IIA type Bragg ***grating*** in fibers with a high content of Ge in the core, as well as a no. of effects that could not be explained earlier.

ST electrostriction bragg ***grating*** germanosilicate ***glass*** fiber photorefractive effect model
IT ***Color*** ***centers***
Diffraction ***gratings***
Electrostriction
Optical fibers

Photorefractive effect
Simulation and Modeling
(electrostriction mechanism of bragg ***grating*** formation in germanosilicate fibers)

IT Germanosilicate ***glasses***
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(electrostriction mechanism of bragg ***grating*** formation in germanosilicate fibers)

IT 1310-53-8, Germanium dioxide, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(electrostriction mechanism of bragg ***grating*** formation in germanosilicate fibers)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Archambault, J; J Electron Lett 1993, V29, P453
(2) Bernardin, J; Opt Commun 1990, V79, P194 CAPLUS
(3) Dianov, E; Proc SPIE-Int Soc Opt Eng 2000, V4083, P132 CAPLUS
(4) Dong, L; Proc Conf on Opt Comm ECOC 1994, V2, P997
(5) Dong, P; Opt Lett 1996, V21, P2032
(6) Dong, P; Proc SPIE-Int Soc Opt Eng 1997, V2998, P49
(7) Hill, K; Appl Phys Lett 1978, V32, P647
(8) Landau, L; Elektrodinamika sploshnykh sred (Electrodynamics of Continuous Media) 1982, P79
(9) Mazurin, O; Svoistva stekol i stekloobrazuyushchikh rasplavov (Properties of Glasses and Glass-Forming Melts) 1973, V1, P76
(10) Meltz, G; Proc SPIE-Int Soc Opt Eng 1991, V1516, P185
(11) Neustruev, V; Fiber Integr Opt 1989, V8, P142
(12) Neustruev, V; J Phys: Condens Matter 1994, V6, P6901 CAPLUS
(13) Payne, F; Electron Lett 1989, V25, P498
(14) Poumellec, B; Opt Mater 1995, V4, P441 CAPLUS
(15) Sceats, M; Ann Rev Mat Sci 1993, V23, P381 CAPLUS
(16) Xie, W; Opt Commun 1993, V104, P185 CAPLUS

AN 2001:690645 CAPLUS
DN 135:364436
ED Entered STN: 21 Sep 2001
TI ***Holographic*** properties of dielectric crystals and amorphous semiconductor films
AU Ozols, Andris O.; Reinfelde, Mara J.
CS Institute of Technical Physiscs, Riga Technical University, Riga, LV-1048, Latvia
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4358(Optics of Crystals), 64-75
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB ***Holog*** . recording properties and mechanisms are analyzed and compared for dielec. electrooptic crystals (EOC), dielec. colored alkali halide crystals (AHC) and amorphous semiconductor films (ASF) using the author's own data as well as thes from the literature. ***Holog*** . photosensitivity parameters are introduced enabling the characterization of the recording mechanism efficiency independently of the particular optical and geometrical sample parameters, and allowing also for recording optimization. Ultimate specific recording energies for EOC, AHC and ASF are theor. estd. It is concluded that the ultimate recording energy for both cryst. and amorphous materials is of order of about 10-6(cm2 %). The best ***holog*** . parameters for the scalar ***hologram*** recording are achieved in EOC. AHC are superior at vector ***hologram*** recording. The conclusion is made that ASF can become serious rivals of EOC in ***holog*** . and optical information processing if other material properties are taken into account such as ***hologram*** lifetime, sample size and cost, ***hologram*** self-enhancement possibilities.

ST ***holog*** property dielec crystal amorphous semiconductor film; ***color*** ***center*** alkali halide crystal ***holog*** property

IT Semiconductor films
(amorphous; ***holog*** . properties of dielec. electrooptic

crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT Arsenide ***glasses***
Selenide ***glasses***
Sulfide ***glasses***
RL: PRP (Properties)
(arsenic selenide sulfide; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT Electrooptical materials
(dielec.; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT Telluride ***glasses***
RL: PRP (Properties)
(germanium telluride; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT ***Holographic*** recording materials
Holography
(***holog*** . properties of dielec. crystals and amorphous semiconductor films)

IT Amorphous semiconductors
Electric insulators
(***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT Alkali metal halides, properties
RL: PRP (Properties)
(***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT Iodide ***glasses***
RL: PRP (Properties)
(silver iodide selenide; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7704-34-9, Sulfur, properties
RL: PRP (Properties)
(arsenic selenide ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7782-49-2, Selenium, properties
RL: PRP (Properties)
(arsenic sulfide ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 13494-80-9, Tellurium, properties
RL: PRP (Properties)
(germanium ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 1309-37-1, Iron oxide(Fe2O3), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(***holog*** . properties of dielec. crystals and amorphous semiconductor films including doped lithium niobate crystals)

IT 12031-63-9, Lithium niobate
RL: PRP (Properties)
(***holog*** . properties of dielec. crystals and amorphous semiconductor films including doped lithium niobate crystals)

IT 7440-23-5, Sodium, properties 7440-45-1, Cerium, properties 7440-70-2, Calcium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 1303-33-9, Arsenic sulfide(As2S3) 7447-40-7, Potassium chloride, properties 7758-02-3, Potassium bromide, properties 12006-05-2, Arsenic selenide(AsSe) 12377-72-9, Bismuth silicon oxide(Bi12SiO20)
106699-21-2, Barium niobium strontium oxide(Ba0.25Nb2Sr0.75O6)
108504-90-1, Potassium niobium tantalum oxide(KNb0.35Ta0.65O3)
148377-86-0, Selenium 70,silver 15, iodine 15 (atomic)

RL: PRP (Properties)
(***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7440-38-2, Arsenic, properties
RL: PRP (Properties)
(selenide sulfide ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7440-22-4, Silver, properties
RL: PRP (Properties)
(selenium iodide ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7553-56-2, Iodine, properties
RL: PRP (Properties)
(silver selenium ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

IT 7440-56-4, Germanium, properties
RL: PRP (Properties)
(tellurium ***glass*** ; ***holog*** . properties of dielec. electrooptic crystals and dielec. colored alkali halide crystals and amorphous semiconductor films)

RE.CNT 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Barachevskii, V; Nonsilver and unusual media for holography (in Russian) 1978, P9
(2) Barachevskii, V; Photochromism and its application (in Russian) 1997
(3) Belinicher, V; JETP (in Russian) 1977, V73, P692
(4) Belous, V; Optika i Spektroskopia (in Russian) 1999, V87, P327 CAPLUS
(5) Berezin, P; Optika i Spektroskopia (in Russian) 1976, V42, P359
(6) Chen, C; Appl Phys Lett 1979, V34, P321 CAPLUS
(7) Egorov, N; Optical Activity Effect on the Holographic Gratings in Photorefractive Cubic Crystals (in Russian) 1987, Preprint No 462
(8) Fukaya, T; Opt Commun 1973, V7, P98 CAPLUS
(9) Glass, A; Ferroelectrics 1976, V10, P163 CAPLUS
(10) Gunter, P; Physics Reports 1982, V93, P199
(11) Gurevich, S; Optical Methods of Information Processing (in Russian) 1974, P117 CAPLUS
(12) Iovu, M; Phys Stat Sol (a) 1996, V156, P375 CAPLUS
(13) Kulich, H; Opt And Quantum Electronics 1987, V19, P93
(14) Kwak, C; Opt Lett 1988, V13, P437 CAPLUS
(15) Lyubin, V; Journ of Non-Crystalline Solids 1998, V227-230, P677 CAPLUS
(16) Markov, V; Holographic recording media (in Russian) 1975, P127 CAPLUS
(17) Megumi, K; Appl Phys Lett 1977, V30, P631 CAPLUS
(18) Micheron, F; Ferroelectrics 1978, V18, P153 CAPLUS
(19) Nordman, O; Opt Commun 1998, V145, P38 CAPLUS
(20) Odulov, S; Kvantovaya Electronika (in Russian) 1983, V10, P1498 CAPLUS
(21) Ozols, A; Abstr 6th All Union Conf On Radiation Physics and Chemistry of Ionic Crystals (in Russian) 1986, P181
(22) Ozols, A; Cryst Latt Def And Amorph Mat 1987, V17, P235 CAPLUS
(23) Ozols, A; J Appl Phys 1994, V75, P3326 CAPLUS
(24) Ozols, A; Kvantovaya Elektronika (in Russian) 1982, V9, P2441 CAPLUS
(25) Ozols, A; Latvijas PSR Zinatnu Akademijas Vestis 1979, 3, P138 CAPLUS
(26) Ozols, A; Latvijas PSR Zinatnu Akademijas Vestis Fiz un tehn zin serija (in Russian) 1977, 4, P46 CAPLUS
(27) Ozols, A; Latvijas PSR Zinatnu Akademijas Vestis Fiz un tehn zin serija (in Russian) 1978, 5, P16 CAPLUS
(28) Ozols, A; Latvijas PSR Zinatnu Akademijas Vestis Fiz un tehn zin serija (in Russian) 1979, 3, P45 CAPLUS
(29) Ozols, A; Phys Rev B 1997, V55, P14236 CAPLUS
(30) Ozols, A; Proc SPIE 1987, V673, P41 CAPLUS
(31) Ozols, A; Proc SPIE 1990, V1183, P159
(32) Ozols, A; Proc SPIE 1997, V2968, P282 CAPLUS
(33) Ozols, A; Proc SPIE, accepted for publication 2001
(34) Ozols, A; Thesis of the doctor of physical -- mathematical sciences, Salaspils, Latvia (in Russian) 1991
(35) Peltier, M; J Appl Phys 1977, V48, P3683 CAPLUS
(36) Raita, E; Appl Opt 1955, V34, P838
(37) Raita, E; Proc Of the 29th Annual Conf Of the Finnish Physical Society 1995, P8

(38) Rosenblum, G; Appl Phys Lett 1999, V75, P3249 CAPLUS
(39) Ruppel, W; Ferroelectrics 1982, V43, P109 CAPLUS
(40) Salminen, O; J Modern Opt 1994, V41, P1507 CAPLUS
(41) Salminen, O; Phys Rev B 1996, V53, P6129 CAPLUS
(42) Schneider, I; Appl Opt 1970, V9, P1163 CAPLUS
(43) Schvartz, K; J Inf Recording 1996, V22, P289
(44) Schvartz, K; The Physics of Optical Recording 1993
(45) Shepelevich, V; Pisma v Zh TF (in Russian) 1981, V7, P1380
(46) Shvarts, K; Ferroelectrics 1987, V75, P231 CAPLUS
(47) Shvarts, K; Optical Recording Media (in Russian) 1976
(48) Spektor, B; J Appl Phys 2000, V87, P3234 CAPLUS
(49) Stepanov, S; Solid State Physics (in Russian) 1977, V19, P721 CAPLUS
(50) Teteris, J; Abstr 12th Scientific Meeting, Institute of Solid State Physics 1996, P9
(51) Todorov, T; Proc Bulg Acad Sci 1976, V29, P1277 CAPLUS
(52) Toigo, J; Scientific American V282, P41

L3 ANSWER 14 OF 41 CAPLUS
AN 2001:685262 CAPLUS
DN 136:9671
ED Entered STN: 19 Sep 2001
TI 157-nm laser-induced modification of fused-silica ***glasses***
AU Zhang, Jie; Herman, Peter R.; Lauer, Christian; Chen, Kevin P.; Wei, Midori
CS Department of Electrical and Computer Engineering, University of Toronto, Toronto, ON, M5S 3G4, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4274(Laser Applications in Microelectronic and Optoelectronic Manufacturing VI), 125-132
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB Bulk laser modification is reported for hydroxyl (OH), chlorine (Cl) and fluorine (F) contg. fused-silica ***glasses*** irradiated with 157-nm F2-laser light. The effects of OH, Cl and F concn., as well as hydrogen (H2) loading, on compaction, refractive-index change, and ***color*** - ***center*** formation are detailed. Vol. ***gratings*** formed with several tens of kJ/cm2 fluence yielded surface-relief ***gratings*** of several tens of nm amplitude and bulk refractive-index changes of nearly 10-3 in both OH- and Cl-content ***glasses*** that were pre-soaked in high-pressure hydrogen. H2-loading offered an approx. 2-fold increase in 157-nm ***glass*** photosensitivity, and also increased the 157-nm material absorption by several factors during the exposure. F-doped ***glass*** did not offer a measurable 157-nm photosensitivity, and the 157-nm absorption showed a surprising order-of-magnitude drop following an approx. 10-kJ/cm2 laser dose.
ST laser damage fused silica photosensitivity refractive index ***color*** ***center***
IT ***Color*** ***centers***
Compaction
Optical absorption
Refractive index
(effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
IT Hydroxyl group
(fused-silica ***glass*** ; effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
IT Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(fused; effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
IT Laser radiation
(modification induced by; effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
IT 7782-41-4, Fluorine, uses 7782-50-5, Chlorine, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(fused-silica ***glass*** ; effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(silica ***glass*** soaking in; effect of OH and Cl and F concn. and H2 loading on compaction and refractive index change and ***color*** ***center*** formation)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Allan, D; Opt Lett 1996, V21, P1960 CAPLUS
(2) Borreli, N; Opt Lett 1999, V24, P1401
(3) Davis, K; Opt Lett 1996, V21, P1729 CAPLUS
(4) Herman, P; Appl Surf Sci 1999, V154-155, P577
(5) Herman, P; Proc SPIE (in press) 2000, V4088 CAPLUS
(6) Hosono, H; Opt Lett 1999, V24, P1549 CAPLUS
(7) Kashyap, R; Fiber Bragg Grating 1999
(8) Kitamura, N; J Non-crystal Solid 1993, V159, P241 CAPLUS
(9) Lauer, C; Internal Research Report 2000
(10) Rothschild, M; Appl Phys Lett 1989, V55, P1276 CAPLUS
(11) Zhang, J; submitted to Appl Phys Lett
(12) Zhang, J; submitted to Opt Lett

L3 ANSWER 15 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:131929 CAPLUS
DN 134:302743
ED Entered STN: 22 Feb 2001
TI Index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers
AU Tsai, Tsung-Ein; Friebele, E. Joseph
CS Naval Research Laboratory, Washington, DC, 20375, USA
SO OSA Trends in Optics and Photonics Series (2000), 33(Bragg Gratings, Photosensitivity, and Poling in Glass Waveguides), 293-301
CODEN: OTOPFZ; ISSN: 1094-5695
PB Optical Society of America
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 77
AB The phys. structures of UV-induced refractive index changes assocd. with fiber Bragg ***gratings*** (FBGs) in Ge-SiO2 core fibers reported to date are reviewed and discussed. They are (1) induced mech. property changes: vol. changes (densification or dilation) and core-cladding interfacing tension changes, and (2) induced ***color*** ***centers*** : Ge E', Ge(1) and Ge(2) paramagnetic defects, and GeH nonparamagnetic defects. Conflicting structural models of the paramagnetic defects proposed in the literature can be resolved by taking into account their different contributions to the refractive index of FBGs.
ST refractive index fiber Bragg ***grating*** ; ***grating*** paramagnetic defect germanium silica core
IT Diffraction ***gratings***
(Bragg; index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers)
IT ***Color*** ***centers***
Mechanical properties
Optical fibers
Paramagnetic ***centers***
Tension
Trapping
(index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers)
IT Silicate ***glasses***
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers)
IT 1333-74-0, Hydrogen, occurrence
RL: DEV (Device component use); OCU (Occurrence, unclassified); OCCU (Occurrence); USES (Uses)
(index structure of fiber Bragg ***gratings*** and paramagnetic

defects in Ge-SiO2 core fibers)
IT 7440-56-4, Germanium, properties
RL: DEV (Device component use); OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence); USES (Uses)
(index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers)
IT 7631-86-9, Silica, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(index structure of fiber Bragg ***gratings*** and paramagnetic defects in Ge-SiO2 core fibers)
RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anderson, D; Electron Lett 1993, V29, P566
(2) Anoikin, E; Sov Lightwave Commun 1991, V1, P123
(3) Atkins, R; Electron Lett 1993, V29, P1234 CAPLUS
(4) Cordier, P; Appl Phys Lett 1997, V70, P1204 CAPLUS
(5) Essid, M; J Appl Phys 1998, V84, P4193 CAPLUS
(6) Fonjallaz, P; Opt Lett 1995, V20, P1346
(7) Friebele, E; Defects in Glasses 1986, V61, P319 CAPLUS
(8) Friebele, E; Mater Res Soc Symp Proc
(9) Fujimaki, M; Phys Rev 1998, V57, P3920 CAPLUS
(10) Hosono, H; J Appl Phys 1996, V80, P3115 CAPLUS
(11) Hosono, H; Jpn J Appl Phys 1996, V35, PL234 CAPLUS
(12) Hosono, H; Phys Rev 1992, VB46, P11445
(13) Hughes, R; Phys Rev 1977, VB15, P2012
(14) Kawazoe, H; J Non-Cryst Solids 1985, V71, P231 CAPLUS
(15) Lemaire, P; Electron Lett 1993, V29, P1191 CAPLUS
(16) Margulis, W; Nature 1995, V378, P699 CAPLUS
(17) Maxwell, G; Electron Lett 1993, V29, P425 CAPLUS
(18) Nagasawa, K; Jpn J Appl Phys 1986, V25, PL682 CAPLUS
(19) Nakahara, M; J Lightwave Technol 1986, V4, P127
(20) Neustruev, V; Fiber and Integrated Optics 1989, V8, P143 CAPLUS
(21) Patrick, H; Opt Lett 1993, V18, P1484 CAPLUS
(22) Poumellec, B; J Phys 3 France 1996, V6, P1595 CAPLUS
(23) Quiqumpois, Y; Opt Lett 1999, V24, P139
(24) Strasser, T; Appl Phys Lett 1994, V65, P3308 CAPLUS
(25) Tsai, T; Appl Phys Lett 1994, V64, P1481 CAPLUS
(26) Tsai, T; Appl Phys Lett 1998, V72, P3243 CAPLUS
(27) Tsai, T; Appl Phys Lett 1999, V75, P2178 CAPLUS
(28) Tsai, T; Diffusion and Defect Data 1987, V53-54, P469 CAPLUS
(29) Tsai, T; J Appl Phys 1987, V62, P2264 CAPLUS
(30) Tsai, T; Opt Lett 1993, V18, P935 CAPLUS
(31) Tsai, T; Opt Lett 1997, V22, P224 CAPLUS
(32) Tsai, T; Proceedings of the International Workshop on Photoinduced Self-Organization Effect in Optical Fiber 1991, V1516, P14
(33) Watanabe, Y; Jpn J Appl Phys 1986, V25, P425 CAPLUS

L3 ANSWER 16 OF 41 CAPLUS
AN 2000:834794 CAPLUS
DN 134:135235
ED Entered STN: 29 Nov 2000
TI Thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass***

AU Potter, B. G.; Simmons-Potter, K.; Dunbar, T. D.
CS Sandia National Laboratories, Albuquerque, NM, 87185-1411, USA

SO Journal of Non-Crystalline Solids (2000), 277(2-3), 114-126
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier Science B.V.
DT Journal
LA English

CC 57-1 (Ceramics)
Section cross-reference(s): 73

AB The thermal stability of photo-imprinted Bragg ***gratings*** formed in reactive-atm., radio-frequency magnetron sputtered germanosilicate thin films was evaluated in terms of point defect modifications obsd. during isochronal annealing. Optical and magnetic spectroscopies were utilized to evaluate structural relaxation in these sputtered ***glasses*** on both the local and medium-range size scale. Depending upon the substrate temp. used during deposition, significant structural rearrangement was found to occur with increasing post-deposition anneal temp. to 600.degree.C. This resulted in changes in the photobleaching response of the material itself as the identity of optically active structural defects

evolved. Based on a ***color*** ***center*** model for photosensitivity in these materials and measured changes in optical absorption with annealing, the thermal stability of a photo-imprinted Bragg ***grating*** was modeled. Good qual. agreement with expt. was obsd.

ST photosensitive Bragg ***grating*** thermal stability germanosilicate ***glass***

IT Diffraction ***gratings***
(Bragg; thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass*** films)

IT Germanosilicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(films; thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass*** films)

IT ***Glass*** structure
(germanosilicate; thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass*** films)

IT Annealing
Optical absorption
Structural relaxation
Thermal stability
(thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass*** films)

IT 1310-53-8, Germania, processes 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(***glass*** films, germanosilicate; thermal stability of photosensitive Bragg ***gratings*** in sputter-deposited germanosilicate ***glass*** films)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Allard, L; Opt Lett 1997, V22, P819 CAPLUS
(2) Durben, D; Phys Rev B 1991, V43, P2355 CAPLUS
(3) Erdogan, T; J Appl Phys 1994, V76, P73
(4) Friebele, E; Mater Res Soc Symp Proc 1986, V61, P319 CAPLUS
(5) Garino-Canina, V; Compt Rend 1956, V242, P1982 CAPLUS
(6) Hemley, R; Phys Rev Lett 1986, V57, P747 CAPLUS
(7) Hosono, H; Phys Rev B 1992, V46(11), P445
(8) Lemaire, P; Elec Lett 1993, V29, P1191 CAPLUS
(9) Neustruev, V; Fibers Integr Opt 1989, V8, P143 CAPLUS
(10) Nishii, J; Phys Rev B 1995, V52, P1661 CAPLUS
(11) Potter, B; Nucl Instrum and Meth B 2000, V166&167, P771
(12) Potter, B; Opt Lett 1992, V17, P1349 CAPLUS
(13) Potter, B; SPIE 1997, V2998, P146 CAPLUS
(14) Sharma, S; J Non-Cryst Solids 1984, V68, P99 CAPLUS
(15) Simmons, K; J Non-Cryst Solids 1994, V179, P254 CAPLUS
(16) Simmons-Potter, K; Appl Phys Lett 1996, V68, P2011 CAPLUS
(17) Simmons-Potter, K; Jpn J Appl Phys Suppl 1998, V37-41, P8
(18) Simmons-Potter, K; SPIE 1997, V2998, P93 CAPLUS
(19) Verweij, H; J Non-Cryst Solids 1979, V33, P41 CAPLUS
(20) Warren, W; Appl Phys Lett 1996, V69, P1453 CAPLUS

L3 ANSWER 17 OF 41 CAPLUS

AN 2000:367866 CAPLUS

DN 133:96702

ED Entered STN: 04 Jun 2000

TI ***Holographic*** manifestations of D ***centers*** in amorphous As2S3 films

AU Ozols, Andris; Nordman, Olli; Nordman, Nina

CS Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia

SO Radiation Effects and Defects in Solids (1999), 150(1-4), 761-766
CODEN: REDSEI; ISSN: 1042-0150

PB Gordon & Breach Science Publishers

DT Journal

LA English

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB The concept of D ***centers*** introduced by N.F. Mott, E.A. Davis and R.A. Street for chalcogenide ***glasses*** is used to explain three

holog . effects in amorphous As2S3 films exptl. obsd. by authors at room temp. These three effects include sub-band gap light ***holog*** . recording (previously assumed to be impossible), strong stimulation of band gap light ***holog*** . recording by sub-band gap readout light, and diffraction efficiency oscillations at low recording intensities in the presence of sub-band gap readout light. The first and the second effects are found to be due to the sub-band gap light induced reorientation and generation of D- and D+ ***centers*** whereas the third effect is explained by the sub-band gap light stimulated D ***center*** diffusion. The phenomenon of photoinduced anisotropy involved in the first two effects is analyzed, too.

ST amorphous arsenic sulfide ***holog*** recording D ***center*** ; photoinduced anisotropy amorphous arsenic sulfide ***holog*** recording D ***center*** ; subband gap ***holog*** recording amorphous arsenic sulfide D ***center***

IT ***Color*** ***centers***
(D; ***holog*** . effects in amorphous As2S3 films explained by concept of D ***centers*** in relation to)

IT ***Holography***
(***holog*** . effects in amorphous As2S3 films explained by concept of D ***centers***)

IT ***Holographic*** recording materials
(***holog*** . effects in amorphous As2S3 films explained by concept of D ***centers*** in relation to)

IT Optical anisotropy
(photoinduced; ***holog*** . effects in amorphous As2S3 films explained by concept of D ***centers***)

IT Band gap
(sb-; sub-band gap light ***holog*** . recording in amorphous As2S3 films explained by concept of D ***centers***)

IT 1303-33-9, Arsenic sulfide(As2S3)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(***holog*** . effects in amorphous As2S3 films explained by concept of D ***centers***)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Bustarret, E; J Non-Cryst Solids 1989, V144, P13
(2) Kolobov, A; Phys Rev B 1997, V55, P8788 CAPLUS
(3) Lazov, L; Bulgarian Journ Phys 1996, V23, P157 CAPLUS
(4) Lyubin, V; J Non-Cryst Solids 1993, V164-166, P1165 CAPLUS
(5) Lyubin, V; J Non-Cryst Solids 1994, V171, P87 CAPLUS
(6) Lyubin, V; Sov Solid State Phys (in Russian) 1991, V33, P2063 CAPLUS
(7) Mott, N; Phil Mag 1975, V32, P961 CAPLUS
(8) Nordman, O; Journ Opt Soc Am B (accepted in 1998) 1998
(9) Ozois, A; Phys Rev B 1997, V55, P14236
(10) Ozols, A; Journ Opt Soc Am B 1998, V15, P2355 CAPLUS
(11) Ozols, A; Opt Commun 1997, V136, P365 CAPLUS
(12) Ozols, A; Proc SPIE 1998, V3347, P247 CAPLUS
(13) Pfeiffer, G; J Non-Cryst Solids 1991, V130, P111 CAPLUS
(14) Rao, K; Solid State Commun 1981, V39, P1065 CAPLUS
(15) Schwartz, K; The Physics of Optical Recording 1993
(16) Tanaka, K; Phys Rev B 1996, V54, P9190 CAPLUS
(17) Tikhomirov, V; Phys Rev B 1995, V51, P5538 CAPLUS
(18) Tyurin, A; Solid State Phys 1996, V38, P379 CAPLUS

L3 ANSWER 18 OF 41 CAPLUS
AN 2000:317865 CAPLUS
DN 133:81187
ED Entered STN: 16 May 2000
TI Single-mode Nd lasers with adaptive cavity and self-phase-conjugation
AU Basiev, Tasoltan T.; Fedin, Alexander V.; Gavrilov, Andrey V.; Kumar, Niranjan; Kyalbieva, Svetlana A.; Ruliov, Andrey V.; Smetanin, Sergey N.; Trifonov, Igor I.
CS Laser Materials and Technologies Center, General Physics Institute, Moscow, Russia
SO Proceedings of SPIE-The International Society for Optical Engineering (2000), 3889(Advanced High-Power Lasers), 676-680
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Self-pumped phase-conjugate multi-loop Nd:YAG, Nd:YAP, and Nd: ***Glass*** lasers were studied and developed. The parametric feedback is realized by dynamic ***holog*** . ***gratings*** in active and passive LiF:F2- Q-switcher medium. High power and spatial laser characteristics were obtained: Nd:YAG laser - - 114 W av. power at 0.5 mrad beam divergence; Nd:YAP laser -- 51 W av. power at 1.2 mrad beam divergence; Nd: ***Glass*** laser --18 J in pulse train at 1 mrad beam divergence.

ST single mode neodymium laser adaptive cavity; self phase conjugation neodymium laser

IT F- ***centers***
(F2-; single-mode Nd lasers with adaptive cavity and self-phase-conjugation using lithium fluoride with ***color*** ***centers*** for switching)

IT Laser radiation
(high power; single-mode Nd lasers with adaptive cavity and self-phase-conjugation using lithium fluoride with ***color*** ***centers*** for switching)

IT Optical phase conjugation
(self-; single-mode Nd lasers with adaptive cavity and self-phase-conjugation with ***holog*** . ***gratings***)

IT Lasers
Optical switching
(single-mode Nd lasers with adaptive cavity and self-phase-conjugation using lithium fluoride with ***color*** ***centers*** for switching)

IT ***Holographic*** diffraction ***gratings***
(single-mode Nd lasers with adaptive cavity and self-phase-conjugation with ***holog*** . ***gratings***)

IT 7789-24-4, Lithium fluoride, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(for switching; single-mode Nd lasers with adaptive cavity and self-phase-conjugation using lithium fluoride with ***color*** ***centers*** for switching)

IT 7440-00-8, Neodymium, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(single-mode Nd lasers with adaptive cavity and self-phase-conjugation)

IT 12003-86-0, YAP 12005-21-9, YAG
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(single-mode Nd lasers with adaptive cavity and self-phase-conjugation)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Baisev, T; Sov J Quantum Electron 1991, V18, P223
(2) Basiev, T; II konf Phase conjugation of laser beam in nonlinear medium 1990, P21 CAPLUS
(3) Basiev, T; Pis'ma v GTF (USSR) 1982, V8, P1532 CAPLUS
(4) Bel'dyugin, I; Sov J Quantum Electron 1989, V16, P1142 CAPLUS
(5) Fedin, A; Izvestia A N. Seria fizicheskaya (Russian) 1999, V63, P1909 CAPLUS
(6) Fedin, A; Proceedings of SPIE 1999, V3684, P59
(7) Grabovskii, V; Sov J Quantum Electron 1995, V22, P361 CAPLUS
(8) Green, R; Physical Review Letters 1996, V77, P3533 CAPLUS
(9) Tomita, A; Appl Phys Lett 1979, V34, P463 CAPLUS
(10) Zhang, T; Chines Phys Lett 1985, V2, P369 CAPLUS

L3 ANSWER 19 OF 41 CAPLUS

AN 1997:589843 CAPLUS
DN 127:269697
ED Entered STN: 15 Sep 1997

TI Photosensitivity of rare-earth-doped ZBLAN fluoride ***glasses***

AU Williams, Glen M.; Tsai, Tsung-Ein; Merzbacher, Celia I.; Friebele, E. Joseph
CS Optical Sciences Division, Naval Research Laboratory, Washington, DC, 20375, USA

SO Journal of Lightwave Technology (1997), 15(8), 1357-1362
CODEN: JLTEDG; ISSN: 0733-8724
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English

CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57

AB We have performed expts. to elucidate the mechanism of photosensitivity in rare-earth-doped fluorozirconate (ZBLAN) ***glasses*** . ***Glasses*** doped with Ce, Tb, Tm, and Pr were studied. Permanent ***holog*** . ***gratings*** were written in bulk samples using 248 nm UV light, with the strongest ***gratings*** obsd. in Ce:ZBLAN. UV-induced changes in both absorption and ESR spectra were obsd. In the Ce-doped ***glasses*** , the ***grating*** formation dynamics were recorded as a function of write beam intensity and Ce concn. The mechanism of photosensitivity involves ***color*** ***center*** (s) creation through a stepwise two photon excitation of a Ce ion. The ***color*** ***center*** (s) can be subsequently bleached by one photon at 248 nm.

ST photosensitive rare earth doped ZBLAN ***glass*** ; cerium terbium doped photosensitive ZBLAN ***glass*** ; thulium praseodymium doped photosensitive ZBLAN ***glass***

IT Absorption spectra
(UV and visible; UV-induced changes in rare-earth-doped ZBLAN fluoride ***glasses***)

IT ESR (electron spin resonance)
Photoinduced optical absorption
(UV-induced changes in rare-earth-doped ZBLAN fluoride ***glasses***)

IT ***Holographic*** diffraction ***gratings***
(UV-induced; photosensitive rare-earth doped ZBLAN fluoride ***glasses***)

IT UV and visible spectra
(absorption; UV-induced changes in rare-earth-doped ZBLAN fluoride ***glasses***)

IT Chloride ***glasses***
RL: PRP (Properties)
(aluminum barium lanthanum sodium zirconium chloride fluoride; photosensitive rare-earth-doped chlorine-doped ZBLAN fluoride ***glasses***)

IT ***Color*** ***centers***
(in photosensitive rare-earth doped ZBLAN fluoride ***glasses***)

IT Rare earth metals, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(photosensitive rare-earth doped ZBLAN fluoride ***glasses***)

IT ZBLAN ***glasses***
RL: PRP (Properties)
(photosensitive rare-earth doped ZBLAN fluoride ***glasses***)

IT 7440-10-0, Praseodymium, properties 7440-27-9, Terbium, properties 7440-30-4, Thulium, properties 7440-45-1, Cerium, properties 16065-90-0, Cerium(4+), properties 18923-26-7, Cerium(3+), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(photosensitive rare-earth doped ZBLAN fluoride ***glasses***)

IT 7647-14-5, Sodium chloride, occurrence 7681-49-4, Sodium fluoride, occurrence 7783-64-4, Zirconium fluoride zrf4 7784-18-1, Aluminum fluoride 7787-32-8, Barium fluoride (baf2) 13709-38-1, Lanthanum fluoride (LaF3)
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(photosensitive rare-earth doped ZBLAN fluoride ***glasses*** contg.)

IT 22537-15-1, Chlorine atom, uses
RL: MOA (Modifier or additive use); USES (Uses)
(photosensitive rare-earth-doped chlorine-doped ZBLAN fluoride ***glasses***)

L3 ANSWER 20 OF 41 CAPLUS

AN 1997:571663 CAPLUS

DN 127:269590

ED Entered STN: 08 Sep 1997

TI Analysis of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra

AU Leconte, Bruno; Xie, Wen-Xiang; Douay, Marc; Bernage, Pascal; Niay, Pierre; Bayon, Jean Francois; Delevaque, Eric; Poignant, Hubert

CS Laboratoire Dynamique Moleculaire Photonique, Centre d'Etudes Recherches Laser Applications, Universite Lille I, Villeneuve d'Ascq, 59655, Fr.

SO Applied Optics (1997), 36(24), 5923-5930
CODEN: APOPAI; ISSN: 0003-6935
PB Optical Society of America
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB UV-induced excess losses have been measured at various pulse energy densities and exposure times in germanosilicate optical fiber preform cores. The corresponding refractive-index changes have been detd. through a Kramers-Kronig anal. Because of the nonlinear behavior of the excess losses as a function of both exposure time and fluence per pulse, one should be careful when comparing the refractive-index modulation deduced from such measurements with that obtained from Bragg ***grating*** reflectivity. Indeed nonlinear effects such as satn. imply that it is necessary to take into account the local character of the change in absorption to calc. the evolution of the refractive-index modulation accurately as a function of the exposure time. Implications of these results are discussed.
ST germanosilicate ***glass*** fiber ***grating*** ***color*** ***center***
IT Optical dispersion
(Kramers-Kronig; anal. of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra)
IT Optical properties
(UV-induced loss; anal. of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra)
IT ***Color*** ***centers***
(UV-induced; anal. of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra)
IT Diffraction ***gratings***
Nonlinear optical properties
Refractive index
(anal. of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra)
IT Germanosilicate ***glasses***
Glass fibers, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(anal. of ***color*** - ***center*** -related contribution to Bragg ***grating*** formation in Ge:SiO2 fiber based on a local Kramers-Kronig transformation of excess loss spectra)

L3 ANSWER 21 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:273432 CAPLUS
DN 126:346258
ED Entered STN: 28 Apr 1997
TI Induced optical absorption in gamma, neutron and ultraviolet irradiated fused quartz and silica
AU Marshall, Christopher D.; Speth, Joel A.; Payne, Stephen A.
CS Lawrence Livermore National Laboratory, PO Box 5508, Livermore, CA, 94550, USA
SO Journal of Non-Crystalline Solids (1997), 212(1), 59-73
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier
DT Journal
LA English
CC 57-1 (Ceramics)
AB We have investigated the effects of UV (4.7 eV), gamma (.apprx.1 MeV), and neutron (.apprx.1 MeV) irradiations on the optical properties of SiO2 ***glass*** samples. Samples from various sources were studied, including synthetic fused silicas and natural fused quartz. Several relationships among the different types of ionizing radiation were examd. For example, both UV light and gamma rays convert the germanium impurity to the B1 absorption band in fused quartz samples. On the other hand, only neutrons are capable of inducing the oxygen deficient ***centers*** (ODCs) with the .apprx.krad-level doses employed here; the ODCs are produced by way of direct knock-on collisions. The ODCs generated by the

neutrons can be converted into E' ***centers*** afterwards with .gamma.-rays. Transient ***grating*** and pump-probe optical expts. show that only a small fraction of the induced defect absorption remains permanently, while nearly all recover to the original condition after a UV pulse. Finally, thermal annealing expts. indicate that the radiation-induced defects can be annealed away at temps. >350.degree.C. We compare the impacts of gamma, neutron, and UV radiation in terms of the mechanism by which defects are generated.

ST radiation defect silica ***glass*** optical absorption

IT ***Color*** ***centers***
(E'; induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

IT Annealing
Optical absorption
(induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

IT Gamma ray
UV radiation
(irradn. with; induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

IT Defects in solids
(oxygen-deficient ***centers*** ; induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

IT 60676-86-0, Vitreous silica
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

IT 12586-31-1, Neutron
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(irradn. with; induced optical absorption in gamma, neutron and UV irradiated fused quartz and silica)

RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Arai, K; Phys Rev 1992, VB45, P10818
(2) Beall, G; Silica:Physical Behavior, Geochemistry and Materials Applications 1994, P473
(3) Bookless, W; The National Ignition Facility:An Overview, Energy and Technology Review 1994, UCRL-52000-94-12
(4) Bruckner, R; J Non-Cryst Solids 1970, V5, P123
(5) de La Rubia, T; J Nucl Mater 1992, V191-194, P108
(6) de La Rubia, T; Radiat Eff Solids 1994, V130&131, P39
(7) Griscom, D; J Ceram Soc Jpn 1991, V99, P923 CAPLUS
(8) Griscom, D; SPIE 1986, V541, P38
(9) Guzzi, M; J Phys:Condens Matter 1993, V5, P8105 CAPLUS
(10) Imai, H; Phys Rev 1991, VB44, P4812
(11) Krajnovich, D; SPIE 1992, V1848, P544
(12) Leclerc, N; Appl Phys Lett 1991, V59, P3369 CAPLUS
(13) Leclerc, N; J Non-Cryst Solids 1992, V149, P115 CAPLUS
(14) Levy, D; Appl Phys Lett 1992, V60, P1667 CAPLUS
(15) Livingston, M; Particle Accelerators 1962, P535
(16) Miley, G; Laser Interaction with Matter Inst Phys Conf Ser No 140: Section 9 1995, P347 CAPLUS
(17) Mizunami, T; Opt Lett 1994, V19, P463 CAPLUS
(18) Nelson, K; J Chem Phys 1982, V77, P1144 CAPLUS
(19) Orth, C; Nucl Fusion 1996, V36, P75 CAPLUS
(20) Palma, G; J Phys Chem Solids 1972, V33, P177 CAPLUS
(21) Plechaty, E; Tabular and Graphical Presentation of 175 Neutron-Group Constants Derived from the LLL Evaluated-Nuclear-Data Library (ENDL), Rev 2 1978, V16(UCRL-50400)
(22) Rothschild, M; J Vac Sci Technol 1988, VB6, P1
(23) Rothschild, M; J Vac Sci Technol 1992, VB10, P2989
(24) Skuja, L; Solid State Commun 1992, V84, P613 CAPLUS
(25) Smakula, A; J Opt Soc Am 1950, V40, P266A
(26) Tsai, T; Appl Phys Lett 1993, V62, P3396 CAPLUS
(27) Tsai, T; Appl Phys Lett 1994, V64, P1481 CAPLUS
(28) Tsai, T; Phys Rev Lett 1988, V61, P444 CAPLUS
(29) Tsai, T; Phys Rev Lett 1991, V67, P2517 CAPLUS
(30) Weast, R; CRC Handbook of Chemistry and Physics
(31) Weeks, R; J Am Ceram Soc 1960, V43, P399
(32) Weeks, R; J Am Ceram Soc 1970, V53, P176 CAPLUS
(33) Weeks, R; J Non-Cryst Solids 1992, V149, P122 CAPLUS

(34) Weeks, R; J Non-Cryst Solids 1994, V179, P1 CAPLUS
(35) Wong, J; J Nucl Mater 1994, V212-215, P143 CAPLUS
(36) Zawadzkas, G; Sandia National Laboratories Radiation Facilities, 3rd Ed 1985, SAND83-0598

L3 ANSWER 22 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:251764 CAPLUS
DN 126:349042
ED Entered STN: 18 Apr 1997
TI Ultraviolet-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading
AU Taunay, T.; Bernage, P.; Douay, M.; Xie, W. X.; Martinelli, G.; Niay, P.; Bayon, J. F.; Delevaque, E.; Poignant, H.
CS Laboratoire de dynamique Moleculaire et Photonique, Universite des Sciences et Technologies de Lille, Villeneuve d'Ascq, 59655, Fr.
SO Journal of the Optical Society of America B: Optical Physics (1997), 14(4), 912-925
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We have studied the photosensitivity of both hydrogen-loaded and unloaded Ce3+-doped aluminosilicate fibers. Refractive-index changes as great as 1.5 .times. 10-3 have been achieved in the treated samples. The thermal stability of ***gratings*** appears to depend not on whether the fiber is treated but rather on the UV cumulative fluence used for the inscription. The change in refractive index follows a power law dependence on exposure time and does not sat. for exposure times as long as .apprx.2h. In contrast, the changes in the absorption spectra sat. after a few seconds of exposure time. This observation and others that the authors report show that the ***color*** - ***center*** model does not fully explain the refractive-index change. As is obsd. in germanosilicate fibers, exposure of the hydrogen-loaded fiber to UV light increases the hydroxyl content according to a power law dependence as a function of time. This shows that enhancement of the fiber's photosensitivity is strongly related to hydrogen-assisted bond breaking within the ***glass*** network. Microscopic inspections of ***gratings*** written in the cores of hydrogen-loaded preforms have shown corrugations embedded in a valley. The depth of the valley and the heights of the corrugations are more important in the hydrogen-loaded sample than in the case of an unloaded preform. This difference is closely correlated with the enhancement of the fiber's photosensitivity.
ST photosensitivity aluminosilicate fiber ***glass*** cerium doped
IT Refractive index
(UV-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading)
IT Aluminosilicate ***glasses***
RL: PRP (Properties)
(UV-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading)
IT Synthetic fibers
RL: PRP (Properties)
(aluminum silicate; UV-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading)
IT 7440-45-1, Cerium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(UV-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading)
IT 1333-74-0, Hydrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(UV-enhanced photosensitivity in cerium-doped aluminosilicate fibers and ***glasses*** through high-pressure hydrogen loading)
RE.CNT 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Albert, J; Opt Lett 1994, V19, P387 CAPLUS
(2) Anderson, D; Electron Lett 1993, V29, P566
(3) Arai, K; J Appl Phys 1986, V59, P3430 CAPLUS
(4) Archambault, J; Conference on Lasers and Electro-Optics, paper CWK3 1994, V8

(5) Armitage, J; Electron Lett 1993, V29, P1181 CAPLUS
(6) Atkins, R; Electron Lett 1993, V29, P1234 CAPLUS
(7) Behrens, E; J Opt Soc Am B 1987, V7, P1437
(8) Behrens, E; Opt Lett 1986, V11, P653 CAPLUS
(9) Bernage, P; Behaviour of Bragg grating written in fibers against .gamma. ray or high temperature exposure 1995
(10) Broer, M; Opt Lett 1991, V16, P1391 CAPLUS
(11) Broer, M; Phys Rev B 1992, V45, P7077 CAPLUS
(12) Broer, M; Proc SPIE 1993, V2044, P316 CAPLUS
(13) Dong, L; J Opt Soc Am B 1993, V10, P89 CAPLUS
(14) Dong, L; Opt Lett 1993, V18, P861 CAPLUS
(15) Fertein, E; Electron Lett 1991, V27, P1838 CAPLUS
(16) Greene, B; J Non-Cryst Solids 1994, V168, P195 CAPLUS
(17) Hill, K; Appl Phys Lett 1978, V32, P647
(18) Hill, K; Appl Phys Lett 1993, V63, P1035
(19) Hill, K; Optical Fiber Communication, paper PD3 1991, V4, P14
(20) Ishii, Y; J Am Ceram Soc 1987, V70, P72 CAPLUS
(21) Kringlebotn, J; Opt Lett 1994, V19, P2101 CAPLUS
(22) Lemaire, P; Electron Lett 1993, V29, P1191 CAPLUS
(23) Limberger, H; Electron Lett 1993, V29, P47
(24) Limberger, H; Photosensitivity and Quadratic Nonlinearity in Glass Waveguides:Fundamentals and Applications, paper SaD4 1995, V22, P56
(25) Malo, B; Appl Phys Lett 1994, V65, P394 CAPLUS
(26) Meltz, G; Opt Lett 1989, V14, P823 CAPLUS
(27) Niay, P; Opt Commun 1994, V113, P176 CAPLUS
(28) Niay, P; Photosensitivity and Quadratic Nonlinearity in Glass Waveguides:Fundamentals and Applications, paper SW A1-1 1995, V22, P66
(29) Patrick, H; J Appl Phys 1995, V78, P2940 CAPLUS
(30) Patrick, H; Opt Lett 1993, V18, P1484 CAPLUS
(31) Poumellec, B; Opt Mater 1995, V4, P404 CAPLUS
(32) Poumellec, B; Photosensitivity and Quadratic Nonlinearity in Glass Waveguides:Fundamentals and Applications, paper SuB6 1995, V22, P112
(33) Russel, P; Proc SPIE 1990, V1373, P126
(34) Russel, P; Proc SPIE 1991, V1516, P1516
(35) Sceats, M; Sixteenth Australian Conference on Optical Fiber Technology 1991
(36) Shelby, J; J Appl Phys 1976, V50, P3702
(37) Strasser, T; Appl Phys Lett 1994, V65, P3308 CAPLUS
(38) Stroud, J; J Chem Phys 1961, V35, P844 CAPLUS
(39) Stroud, J; J Chem Phys 1962, V37, P836 CAPLUS
(40) Stroud, J; J Chem Phys 1965, V43, P2442 CAPLUS
(41) Townsend, J; Electron Lett 1987, V23, P329
(42) Wehr, M; Rev Tech Thomson-CSF 1981, V13, P802
(43) Williams, G; Optical Waveguide Materials 1992, P59 CAPLUS
(44) Williams, G; Proc SPIE 1993, V2044, P322 CAPLUS
(45) Zhang, B; Appl Phys Lett 1995, V66, P2658 CAPLUS
(46) Zhong, Q; J Lightwave Technol 1994, V12, P1517 CAPLUS

L3 ANSWER 23 OF 41 CAPLUS
AN 1996:522555 CAPLUS
DN 125:260624
ED Entered STN: 30 Aug 1996
TI Optically induced GeO2-SiO2 fiber ***gratings*** (formation mechanism and new application)
AU Nishii, Junji; Hosono, Hideo
CS Osaka National Research Institute, Japan
SO Optronics (1996), 176, 142-148
CODEN: OPUTDD; ISSN: 0286-9659
PB Oputoronikususha
DT Journal
LA Japanese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 75, 77
AB UV induced photochem. reactions in Ge2O-SiO2 ***glasses*** were closely related with the formation of Bragg ***gratings*** . Two kinds of ***color*** ***centers*** were formed depending on the power d. of UV light sources: GeE' ***center*** by irradn. with UV lamp (1-photon absorption) and Ge electron trapped ***center*** (GEC) induced by the excimer laser irradn. (two-photon absorption). The precursors of the former and the latter were an oxygen deficient defect causing an absorption band at 5 eV and the 4-fold-coordinated Ge.

Photon-induced property changes in GeO2-SiO2 ***glasses*** prepd. by ion implantation and sputtering methods were also described.

ST germanium oxide silica fiber ***grating*** ; laser induced germanium silicate fiber ***grating*** ; UV laser induced fiber ***grating*** ; electron trap ***center*** germanium silicon oxide

IT Electron spin resonance
(ESR of optically induced GeO2-SiO2 fiber ***gratings***)

IT ***Color*** ***centers***
(E', optically induced GeO2-SiO2 fiber ***gratings*** and ***color*** ***center*** formation)

IT Laser radiation
(UV, optically induced GeO2-SiO2 fiber ***gratings***)

IT ***Glass*** , oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(germanium silicate, optically induced GeO2-SiO2 fiber ***gratings***)

IT Ions in solids
(implanted, UV induced photochem. changes in ion implanted GeO2-SiO2 fiber ***gratings***)

IT Diffraction ***gratings***
(laser-induced, optically induced GeO2-SiO2 fiber ***gratings***)

IT Optical absorption
(two-photon, UV laser induced GeO2-SiO2 fiber ***gratings***)

IT 1310-53-8, Germanium oxide (GeO2), properties 7631-86-9, Silicon oxide (SiO2), properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optically induced GeO2-SiO2 fiber ***gratings***)

L3 ANSWER 24 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1996:459771 CAPLUS

DN 125:153895

ED Entered STN: 03 Aug 1996

TI Maskless photoencoded selective etching for ***glass*** -based microtechnology applications

AU Kyung, Jae H.; Lawandy, N. M.

CS Department of Physics, Brown University, Providence, RI, 02912, USA

SO Optics Letters (1996), 21(3), 174-176
CODEN: OPLEDP; ISSN: 0146-9592

PB Optical Society of America

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74, 76

AB Two-photon excitation of carriers in boron E'- ***center*** -contg. SK5 borosilicate ***glass*** results in a photoencoding of selectively etchable regions. Using a turbulent etching process followed by polishing, the authors demonstrated a no. of patterning capabilities for microtechnol. applications such as ultrafast capillary electrophoresis chips and rapid prototyping of diffractive optical elements.

ST surface structure ***glass*** selective etching; borosilicate ***glass*** hydrofluoric acid selective etching; photoencoded maskless selective etching ***glass*** microstructure; borate ***glass*** SK5 laser exposure etching

IT Polishing
(grooves in borosilicate ***glass*** polished with Al2O3 particles)

IT Laser radiation
(laser encoded selective etching of borosilicate ***glass***)

IT Annealing
(laser encoded selective etching of borosilicate ***glass*** and effect of annealing)

IT Diffraction ***gratings***
(laser encoded selective etching of micron-scale grooves in borosilicate ***glass***)

IT ***Color*** ***centers***
(E', laser encoded selective etching of borosilicate ***glass*** and effect of annealing)

IT ***Glass*** , oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(borosilicate, maskless laser encoded selective etching of SK5 borosilicate ***glass***)
IT Surface structure
(corrugated, laser encoded selective etching of micron-scale grooves in borosilicate ***glass***)
IT Etching
(photochem., laser encoded HF selective etching of borosilicate ***glass***)
IT 1344-28-1, Alumina, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(grooves in borosilicate ***glass*** polished with Al2O3 particles)
IT 7664-39-3, Hydrogen fluoride, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(maskless laser encoded selective etching of borosilicate ***glass***)

L3 ANSWER 25 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:153149 CAPLUS
DN 124:214921
ED Entered STN: 15 Mar 1996
TI Correlation between Ge E' ***centers*** and optical absorption bands in SiO2:GeO2 ***glasses***
AU Hosono, Hideo; Mizuguchi, Masafumi; Kawazoe, Hiroshi; Nishii, Junji
CS Res. Lab. Eng. Materials, Tokyo Inst. Technology, Yokohama, 226, Japan
SO Japanese Journal of Applied Physics, Part 2: Letters (1996), 35(2B), L234-L236
CODEN: JAPLD8; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Correlations between optical absorptions in UV and vacuum UV regions and Ge E' ***centers*** were examd. using 9SiO2.1GeO2 ***glasses*** irradiated with ArF excimer laser light in order to det. the optical absorption bands due to Ge E' ***centers*** and the oscillator strength. A good correlation between the band peaking at 6.3 eV and Ge E' ***centers*** was found in the isochronal annealing expt. The oscillator strength of the 6.3 eV band was detd. to be 0.5.+-.0.1 on the assumption of the above correlation. The large oscillator strength of the 6.3 eV band due to Ge E' ***centers*** is compatible with the Kramers-Kroning mechanisms of photoinduced Bragg ***grating*** formation.
ST germanium E ***center*** optical absorption band; germania silica ***glass*** optical absorption band
IT Oscillator strength
Ultraviolet and visible spectra
(correlation between Ge E' ***centers*** and optical absorption bands in SiO2:GeO2 ***glasses***)
IT ***Glass*** , oxide
RL: PRP (Properties)
(correlation between Ge E' ***centers*** and optical absorption bands in SiO2:GeO2 ***glasses***)
IT ***Color*** ***centers***
(E', correlation between Ge E' ***centers*** and optical absorption bands in SiO2:GeO2 ***glasses***)
IT 1310-53-8, Germania, properties 7440-56-4, Germanium, properties 7631-86-9, Silica, properties
RL: PRP (Properties)
(correlation between Ge E' ***centers*** and optical absorption bands in SiO2:GeO2 ***glasses***)

L3 ANSWER 26 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:987072 CAPLUS
DN 124:63840
ED Entered STN: 16 Dec 1995
TI ***Color*** ***centers*** produced by .gamma.-irradiation and seeding of the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers
AU Kornienko, L. S.; Stupina, V. I.; Chernov, P. V.
CS Skobel'tsyn Res. Inst. Nuclear Phys., Moscow, 119899, Russia
SO Glass Physics and Chemistry (Translation of Fizika i Khimiya Stekla)

(1995), 21(5), 326-9
CODEN: GPHCEE
PB MAIK Nauka/Interperiodica
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB The absorption spectra induced by .gamma.-irradn. and by the recording of writing the quadratic-susceptibility .chi.(2) ***gratings*** are obtained for the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers. The nature of the ***color*** ***centers*** , which are responsible for microscopic changes in the ***glass*** structure, is investigated.
ST ***color*** ***center*** optical fiber gamma irradn; aluminosilicate optical fiber ***color*** ***center*** ; seeding aluminosilicate optical fiber ***color*** ***center***
IT Optical fibers
(aluminosilicate; ***color*** ***centers*** produced by .gamma.-irradn. and seeding of the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers)
IT ***Color*** ***centers***
(***color*** ***centers*** produced by .gamma.-irradn. and seeding of the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers)
IT Gamma ray
(irradn.; ***color*** ***centers*** produced by .gamma.-irradn. and seeding of the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers)
IT 7440-19-9, Samarium, uses 7440-27-9, Terbium, uses 7440-52-0, Erbium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; ***color*** ***centers*** produced by .gamma.-irradn. and seeding of the samarium-, terbium-, and erbium-doped aluminosilicate optical fibers)

L3 ANSWER 27 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:283152 CAPLUS
DN 120:283152
ED Entered STN: 28 May 1994
TI Resonant photosensitivity in rare earth doped ***glasses*** and optical fibers
AU Broer, M. M.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1993), 2044(Photosensitivity and Self-Organization in Optical Fibers and Waveguides), 316-21
CODEN: PSISDG; ISSN: 0277-786X
DT Journal; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A review with 15 refs. on permanent changes in the refractive index and optical transmission which occur in some rare earth-doped inorg. ***glasses*** and optical fibers when resonantly excited into specific 4f and 5d manifolds. These phenomena are believed to be electronic involving ***color*** ***centers*** . They are important for both refractive index ***grating*** devices as well as for the optical reliability of Er3+-doped optical fiber amplifiers.
ST photosensitivity rare earth ***glass*** fiber review
IT Optical absorption
(by rare earth-doped ***glasses*** and optical fibers, changes in)
IT Refractive index and Optical refraction
(in rare earth-doped ***glasses*** and optical fibers, changes in)
IT Rare earth metals, uses
RL: USES (Uses)
(resonant photosensitivity in ***glasses*** and optical fibers doped with)
IT Optical fibers
(resonant photosensitivity in rare earth-doped)
IT ***Glass*** , oxide
RL: PRP (Properties)
(resonant photosensitivity in rare earth-doped)

L3 ANSWER 28 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:120263 CAPLUS
DN 120:120263
ED Entered STN: 05 Mar 1994
TI Nonlinear fiber optics
AU Stegeman, G.
CS Cent. Res. Electro-Opt. Lasers, Univ. Cent. Florida, Orlando, FL, USA
SO Report (1992), AFOSR-TR-93-0005; Order No. AD-A259363, 18 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1993, 93(9), Abstr. No. 327,259
DT Report
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Nonlinear interactions in fibers, primarily for applications to all-optical switching devices, have been investigated. The theory of all-optical switching with gain in Er-doped dual core fibers has been developed. Several and various expts. were performed in nonlinear fiber rocking filters. A femtosecond IR (1650 nm) source has been built. An APM ***color*** ***center*** laser (300 fs-1 ps pulse width) has been constructed. A new mechanism for soliton compression has been demonstrated. A dual frequency, cw ***color*** ***center*** laser has been constructed. The periodic evolution into dark solitons of a pulsed two ***color*** source has been demonstrated. Photoinduced ***gratings*** in Ge-doped sol-gel films have been demonstrated. Nonlinear fiber-optic expts. in tapered fibers have been attempted.
ST nonlinear fiber optic expt laser; optical fiber expt laser; switching device optical fiber; soliton switching interaction; erbium doped dual core fiber; laser nonlinear fiber optics
IT Optical fibers
(nonlinear interactions in)
IT Optical nonlinear property
(of fibers and ***glasses***)
IT Lasers
(***color*** - ***center*** , nonlinear fiber optics for)
IT Quasiparticles and Excitations
(solitons, optical, compression and interactions of, in pulsed two- ***color*** source)
IT Optical instruments
(switches, nonlinear interactions in)
IT 7440-52-0, Erbium, properties
RL: PRP (Properties)
(nonlinear interactions in dual core fibers doped with)
IT 7440-56-4, Germanium, properties
RL: PRP (Properties)
(photoinduced ***gratings*** in sol-gel films doped with)

L3 ANSWER 29 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:581241 CAPLUS
DN 117:181241
ED Entered STN: 01 Nov 1992
TI Single-frequency stable neodymium ***glass*** laser with a longitudinal mode selector based on a F2- ***color*** ***center*** -containing lithium fluoride crystal
AU Il'ichev, N. N.; Malyutin, A. A.; Pashinin, P. P.; Shpuga, S. M.
CS Inst. Obshch. Fiz., Moscow, Russia
SO Kvantovaya Elektronika (Moscow) (1992), 19(6), 589-92
CODEN: KVEKA3; ISSN: 0368-7147
DT Journal
LA Russian
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A single frequency neodymium ***glass*** laser was constructed and in this laser the longitudinal modes were selected using an LiF crystal contg. F2- ***color*** ***centers*** , which served also as a passive switch. A spectrally selective ***grating*** formed in such a switch during laser operation, resulting in spontaneous transformation of an initially wide spectrum into a single-frequency one. An anal. was made of the requirements which components of a single-frequency laser should satisfy and its characteristics were detd.
ST neodymium ***glass*** laser longitudinal mode selector; ***color***

center laser mode selector; lithium fluoride laser mode selector
IT Lasers
(neodymium- ***glass*** , single-frequency stable, with ***color*** ***center*** -contg. lithium fluoride longitudinal mode selector)
IT ***Color*** ***centers***
(F2-, in lithium fluoride as longitudinal mode selector for neodymium- ***glass*** laser)
IT 7440-00-8
RL: DEV (Device component use); USES (Uses)
(lasers, neodymium- ***glass*** , single-frequency stable, with ***color*** ***center*** -contg. lithium fluoride longitudinal mode selector)
IT 7789-24-4, Lithium fluoride, uses
RL: USES (Uses)
(longitudinal mode selector from ***color*** ***center*** -contg., for neodymium- ***glass*** laser)

L3 ANSWER 30 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:500583 CAPLUS
DN 117:100583
ED Entered STN: 05 Sep 1992
TI Ultraviolet-induced distributed-feedback ***gratings*** in cerium(3+)-doped silica optical fibers
AU Broer, M. M.; Cone, R. L.; Simpson, J. R.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Optics Letters (1991), 16(18), 1391-3
CODEN: OPLEDP; ISSN: 0146-9592
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Nondegenerate 4-wave mixing was used to write permanent distributed-feedback refractive-index ***gratings*** in a Cd3+-doped (80 ppm), aluminosilicate, single-mode ***glass*** optical fiber at 300 K with a corresponding change in the refractive index .DELTA.n = 2.5 .times. 10-5 at 808 nm. Direct excitation of the 2F5/2-5d transition at 292 nm results in the photoionization of Ce3+ and the creation of ***color*** ***centers*** . The photoinduced absorption recovered on wavelength-dependent time scales ranging from seconds to hours. At .ltorsim.450 nm the recovery was incomplete, which contributed to the obsd. refractive index change.
ST cerium silica optical fiber refractive ***grating***
IT Diffraction ***gratings***
(UV-induced distributed-feedback, in cerium trication-doped silica optical fibers)
IT Optical fibers
(cerium trication-doped silica, UV-induced distributed-feedback ***gratings*** in)
IT Ionization, photo-
(of cerium trication doped in silica optical fibers, UV-induced distributed-feedback ***gratings*** in relation to)
IT ***Color*** ***centers***
(of cerium trication-doped silica optical fibers, UV-induced distributed-feedback ***gratings*** in relation to)
IT Optical nonlinear property
(four-wave mixing, nondegenerate, for UV-induced distributed-feedback ***gratings*** in cerium trication-doped silica optical fibers)
IT Optical absorption
(photoinduced, by cerium trication-doped silica optical fibers, UV-induced distributed-feedback ***gratings*** in relation to)
IT 1344-28-1, Alumina, uses 16065-90-0, Cerium ion(4+), uses
RL: USES (Uses)
(cerium trication-doped silica optical fiber contg., UV-induced distributed-feedback ***gratings*** in)
IT 60676-86-0, Vitreous silica
RL: USES (Uses)
(optical fiber of cerium trication-doped, UV-induced distributed-feedback ***gratings*** in)
IT 18923-26-7, uses
RL: USES (Uses)
(silica optical fiber contg., UV-induced distributed-feedback ***gratings*** in)

L3 ANSWER 31 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:243965 CAPLUS
DN 116:243965
ED Entered STN: 13 Jun 1992
TI Permanent photowritten optical ***gratings*** in irradiated silicate ***glasses***
AU Williams, G. M.; Dutt, D. A.; Ruller, J. A.; Friebele, E. J.
CS Opt. Sci. Div., Nav. Res. Lab., Washington, DC, 20375-5000, USA
SO Optics Letters (1992), 17(7), 532-4
CODEN: OPLEDP; ISSN: 0146-9592
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
AB It is shown that permanent optical ***gratings*** can be photowritten into simple silicate ***glasses*** by exposure to interfering beams of an Ar-ion laser after the ***glass*** was treated by x-rays. ***Gratings*** with index modulations as large as .DELTA.n = 10-5 can be formed in less than a minute by exposure to write beams with intensities of the order of 50 W/cm2.
ST optical ***grating*** radiolyzed silica ***glass*** ; photoinduced laser writing silica ***glass***
IT X-ray
(coloration of praseodymium-doped silicate ***glasses*** induced by, permanent light-induced writing of optical ***gratings*** in)
IT ***Color*** ***centers***
(in x-ray exposed silicate ***glasses*** , permanent photoinduced writing of optical ***gratings*** in)
IT ***Holography***
(permanent photoinduced writing of optical ***gratings*** in x-ray irradiated silicate ***glasses*** in relation to)
IT ***Glass*** , oxide
RL: PRP (Properties)
(photoinduced writing of permanent optical ***gratings*** in x-ray irradiated)
IT Diffraction ***gratings***
(photoinduced writing of permanent, in x-ray irradiated silicate ***glasses***)
IT Laser radiation
(writing of permanent optical ***gratings*** in x-ray exposed silicate ***glasses*** by)
IT 1314-13-2, Zinc monoxide, uses 12036-32-7, Praseodymium oxide (Pr2O3)
RL: USES (Uses)
(photoinduced writing of optical ***gratings*** in x-ray irradiated silicate ***glasses*** doped with)

L3 ANSWER 32 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:70823 CAPLUS
DN 116:70823
ED Entered STN: 21 Feb 1992
TI Photosensitivity in optical fibers: detection, characterization and application to the fabrication of in-core fiber index ***gratings***
AU Malo, Bernard; Bilodeau, Francois; Johnson, Derwyn C.; Skinner, Iain M.; Hill, Kenneth O.; Morse, Ted F.; Kilian, Arnd; Reinhart, Lawrence; Oh, Kyunghwan
CS Commun. Res. Cent., Ottawa, ON, K2H 8S2, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (1991), 1590(Submol. Glass Chem. Phys.), 83-93
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The irradn. of optical fibers by intense optical fields from visible or UV laser sources creates ***color*** ***centers*** within the ***glass*** fiber. Such laser light irradn. usually has the detrimental effect of increasing the transmission loss of the optical fibers particularly in the visible spectral region. A concomitant effect of the light irradn. is that the refractive index of the ***glass*** is permanently changed even at wavelengths much longer than the wavelength of

the irradiating light. This latter effect termed fiber photosensitivity is beneficial in that it provides a versatile means for fabricating periodic index ***gratings*** in the cores of optical fibers. Since the phys. processes underlying fiber photosensitivity are not well understood, a purpose of this paper is demonstrate the importance of the phenomena in order to stimulate further research on the origin of the effect and developing new photosensitive fiber materials. The paper reviews briefly the phenomena of photosensitivity in ***glass*** fibers with germanium dopant in the fiber core. The methods used for detecting and characterizing fiber photosensitivity are applied to a new photosensitive fiber, Eu2+:Al2O3-doped-core fiber. This fiber was manufd. at Brown University using MCVD with a novel aerosol delivery system for the transport of low pressure precursors. This is the first fiber reported that is free of germanium dopant and also exhibits fiber photosensitivity.

ST photosensitivity optical fiber; UV visible laser irradn optical fiber

IT Diffraction ***gratings***
(fabrication of, photosensitivity in optical fibers in relation to)

IT ***Color*** ***centers***
(in optical fibers irradiated by lasers, photosensitivity in relation to)

IT Refractive index and Optical refraction
(of optical fibers, photosensitivity in)

IT Optical fibers
(photosensitivity in)

IT Laser radiation
(photosensitivity in optical fibers irradiated by)

IT 16910-54-6, Europium(2+), uses
RL: USES (Uses)
(optical fibers from aluminum oxide and, photosensitivity of)

IT 1344-28-1, Aluminum oxide, properties
RL: PRP (Properties)
(optical fibers from europium(2+)-doped, photosensitivity of)

L3 ANSWER 33 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1991:592698 CAPLUS

DN 115:192698

ED Entered STN: 01 Nov 1991

TI Photoinduced change of silicate ***glasses*** optical parameters at two-photon laser radiation absorption

AU Glebov, L. B.; Efimov, O. M.; Mekryukov, A. M.

CS S. I. Vavilov State Opt. Inst., Leningrad, 199034, USSR

SO Proceedings of SPIE-The International Society for Optical Engineering (1991), 1513(Glasses Optoelectron. 2), 274-82
CODEN: PSISDG; ISSN: 0277-786X

DT Journal

LA English

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB The mechanisms of photoinduced change of alkali silicate and lead silicate ***glass*** optical parameters upon exposure to the intense laser radiation with E9/2 < h.nu. < Eg (Eg is the ***glass*** matrix ionization potential) was studied. Under these conditions, the ***color*** ***centers*** accumulation and fundamental luminescence were obsd. owing to two-photon ionization of ***glass*** matrix. The satn. value of addnl. absorption depends on the irradiance of laser radiation. It is defined by the dynamic equil. between 2-photon absorption and 1-photon discoloration of ***color*** ***centers*** . This effect may be used for bulk ***holog*** . record in the colored ***glasses*** . The process of 2-photon generation of charge carriers occurs with an increase of absorption for a wide spectral range as well as the change of refractive index of ***glass*** . These effects essentially decreases the brightness of the laser radiation passing through the medium even for samples less 1 mm thickness. On the basis of anal., the characteristics of fundamental and impure luminescence, the kinetics of ***color*** ***centers*** formation and decay, the kinetics of refractive index change under conditions of 2-photon ***glass*** matrix excitation and the available mechanisms of photoinduced changes of ***glass*** optical parameters are offered.

ST silicate ***glass*** photoinduced optical property

IT Photon
(absorption of 2, by silicate ***glass*** , photoinduced optical

property changes based on)
IT Laser radiation
(absorption of 2-photons of, by silicate ***glass***)
IT ***Color*** ***centers***
(laser induced, in silicate ***glass***)
IT Luminescence
(of silicate ***glass*** , 2-photon excitation in)
IT Optical property
(photoinduced changes in, of silicate ***glass***)
IT Electric current carriers
(photo-, in silicate ***glass*** , 2-photon)
IT ***Glass*** , oxide
RL: PRP (Properties)
(silicate, photoinduced changes in optical properties of, following 2-photon absorption)

L3 ANSWER 34 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:217429 CAPLUS
DN 114:217429
ED Entered STN: 31 May 1991
TI Frequency doubling, absorption and ***grating*** formation in ***glass*** fibers: effective defects or defective effects?
AU Russell, P. St. J.; Poyntz-Wright, L. J.; Hand, D. P.
CS Phys. Lab., Univ. Kent, Canterbury, UK
SO Proceedings of SPIE-The International Society for Optical Engineering (1991), 1373(Fiber Laser Sources Amplifiers 2), 126-39
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The present understanding of ***color*** ***centers*** in germanosilicate ***glass*** fibers and the diverse effects attributed to ***color*** ***center*** activity are reviewed. Drawing on a wide range of up-to-date research results, an attempt is made to piece together as far as possible a unified picture of the defect processes behind second harmonic generation, nonlinear transmission and photorefractive ***grating*** formation in optical fibers.
ST ***glass*** fiber frequency doubling absorption ***grating*** ; ***color*** ***center*** germanosilicate ***glass*** fiber
IT Optical fibers
(frequency doubling and ***grating*** formation in)
IT ***Color*** ***centers***
Diffraction ***gratings***
(in ***glass*** fibers)
IT Optical nonlinear property
Ultraviolet and visible spectra
(of ***glass*** fibers)

L3 ANSWER 35 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:601168 CAPLUS
DN 113:201168
ED Entered STN: 23 Nov 1990
TI New type of ***hologram*** recording in planar waveguides based on ***glass***
AU Glebov, L. B.; Nikonorov, N. V.; Petrovskii, G. T.; Kharchenko, M. V.
CS Gos. Opt. Inst., Leningrad, USSR
SO Doklady Akademii Nauk SSSR (1990), 312(4), 852-4 [Phys.]
CODEN: DANKAS; ISSN: 0002-3264
DT Journal
LA Russian
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Holog*** . recording is demonstrated based on intramode interference in photosensitive planar waveguides. The waveguides were prepd. by treating the polished samples in KNO3 melt (20 min, 430.degree.). In obtained waveguides 2 modes of TE- and TM-polarization were propagated. The waveguides were .gamma.-irradiated to produce ***color*** ***centers*** . The active radiation of He-Cd laser (441 nm) was focused to excite 2 modes which interfered (interference period was ZTE = 0.15 mm). In max. of the interference pattern bleaching of the waveguide took place. Reading of ***hologram*** was accomplished by excitation of

one of the modes on active .lambda.. Diffraction efficiency of recorded ***hologram*** increased with exposure dose of active radiation (H) to reach 1.7% at H = 60-70 kg/cm2.
ST waveguide mode interference ***holog*** recording
IT ***Color*** ***centers***
(in ***glass*** planar waveguides, ***hologram*** recording based on intramode interference and bleaching of)
IT ***Holography***
(recording by, based on intramode interference in photosensitive planar waveguides)
IT Waveguides
(optical, planar, ***glass*** , ***holog*** . recording in photosensitive, based on intramode interference)
IT 24203-36-9, uses and miscellaneous
RL: USES (Uses)
(***glass*** waveguides exchanged with, ***hologram*** recording in, based on intramode interference)

L3 ANSWER 36 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:505477 CAPLUS
DN 111:105477
ED Entered STN: 16 Sep 1989
TI Optical devices based on photochromic materials
IN Mallinson, Stephen Robert; Millar, Colin Anderson; Ainslie, Benjamin James; Graig, Susan Patricia
PA British Telecommunications PLC, UK
SO Brit. UK Pat. Appl., 22 pp.
CODEN: BAXXDU
DT Patent
LA English
IC ICM C03C004-04
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2210873	A1	19890621	GB 1987-22014	19870918
PRAI	GB 1987-22014		19870918		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
GB 2210873	ICM	C03C004-04
	IPCI	C03C0004-04 [ICM,4]

AB The title devices comprise a ***glass*** host doped with a lanthanide rare earth element which is sol. in the ***glass*** matrix, the dopant being present in a concn. which allows photochromic behavior to be elicited from the doped ***glass*** . The lanthanide may be Tm, Ce, Sm, Eu, or Dy. The devices include optical memory devices, modulators, optical switches, diffraction ***gratings*** , and lasers.
ST dysprosium doped ***glass*** photochromism optical device; europium doped ***glass*** photochromism optical device; samarium doped ***glass*** photochromism optical device; cerium doped ***glass*** photochromism optical device; thulium doped ***glass*** photochromism optical device; lanthanide doped ***glass*** photochromism optical device; modulator optical lanthanide doped ***glass*** photochromism; switch optical lanthanide doped ***glass*** photochromism; memory device lanthanide doped ***glass*** photochromism; laser lanthanide doped ***glass*** photochromism; diffraction ***grating*** lanthanide doped ***glass*** photochromism
IT Diffraction ***gratings***
Lasers
(based on photochromic lanthanide-doped ***glasses***)
IT Rare earth metals, uses and miscellaneous
RL: USES (Uses)
(optical devices based on photochromic ***glass*** host doped with)
IT Lasers
(***color*** - ***center*** , based on photochromic lanthanide-doped ***glasses***)
IT Optical instruments
(modulators, based on photochromic lanthanide-doped ***glasses***)
IT Memory devices

(optical, based on photochromic lanthanide-doped ***glasses***)
IT ***Glass*** , nonoxide
RL: PRP (Properties)
(photochromic, lanthanide-doped)
IT ***Glass*** , oxide
RL: PRP (Properties)
(photochromic, optical devices based on lanthanide-doped)
IT Optical instruments
(switches, based on photochromic lanthanide-doped ***glasses***)
IT 7429-91-6, Dysprosium, uses and miscellaneous 7440-19-9, Samarium, uses and miscellaneous 7440-30-4, Thulium, uses and miscellaneous 7440-45-1, Cerium, uses and miscellaneous 7440-53-1, Europium, uses and miscellaneous 22541-23-7, Thulium ion (Tm+3), properties
RL: USES (Uses)
(optical devices based on photochromic ***glass*** host doped with)

L3 ANSWER 37 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:523049 CAPLUS
DN 105:123049
ED Entered STN: 03 Oct 1986
TI The varied causes of ***color*** in ***glass***
AU Nassau, K.
CS Bell Lab., AT and T, Murray Hill, NJ, 07974, USA
SO Materials Research Society Symposium Proceedings (1986), 61(Defects Glasses), 427-39
CODEN: MRSPDH; ISSN: 0272-9172
DT Journal; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 75
AB A review with 17 refs. All but 2 of the 15 phys. and chem. mechanisms which are necessary to explain all the varied causes of ***color*** apply in one way or another to ***glass*** . These 15 causes of ***color*** derive from a variety of phys. and chem. mechanisms and are summarized in 5 groups with concn. on those mechanisms that apply to ***glass*** and the related glazes and enamels. Vibrations and simple excitations explain the ***colors*** of incandescence (e.g. flames, hot ***glass***), gas excitations (neon tube, aurora), and vibrations and rotations (blue ice, water, ***glass*** based on water). Ligand field effect ***colors*** are seen in transition metal compds. (turqoise, chrome oxide green, ***glasses*** based on copper sulfate) and impurities (ruby, emerald, many doped ***glasses***). Mol. orbitals explain the ***colors*** of org. compds. (indigo, chlorophyll, org. ***glasses***) and charge transfer compds. (blue sapphire, lapis lazuli, beer-bottle brown and chromate ***glasses***). Energy bands are involved in the ***colors*** of metals and alloys (gold, brass, ***glass*** metals), of semiconductors (cadmium yellow, vermillion, chalcogenide ***glasses***), doped semiconductors (blue and yellow diamond), and ***color*** ***centers*** (amethyst, topaz, irradiated ***glass***). Geometrical and phys. optics are involved in the ***colors*** derived from dispersive refraction (rainbow, green flash, ***glass*** prism spectrum), scattering (blue sky, blue eyes, red sunset, ruby gold and opal ***glasses***), interference (soap bubbles, iridescent beetles, cracks in ***glasses*** , interference filters), and diffraction (the corona aureole, diffraction ***grating*** spectrum).
ST review ***color*** mechanism ***glass***
IT ***Glass*** , oxide
RL: PRP (Properties)
(***color*** mechanism of)
IT ***Color*** ***centers***
(in ***glass***)
IT ***Color***
(of ***glass*** , mechanism of)

L3 ANSWER 38 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:429770 CAPLUS
DN 91:29770
ED Entered STN: 12 May 1984
TI Recording of a diffraction ***grating*** in ***glass*** activated by iron using laser UV emission

AU   Bukharev, A. A.; Yafaev, N. R.
CS   Kazan. Fiz.-Tekh. Inst., Kazan, USSR
SO   Pis'ma v Zhurnal Tekhnicheskoi Fiziki (1979), 5(4), 247-50
     CODEN: PZTFDD; ISSN: 0320-0116
DT   Journal
LA   Russian
CC   73-2 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB   Silicate ***glasses*** activated by Fe are useful for recording optical information with the use of UV-laser radiation. During this unstable and stable ***color*** ***centers*** are found in the visible region; the latter provides storage of the recorded information for a long time and the reading of it at various wavelengths. Thermal annealing at >200.degree. returns the ***glass*** to its original state to be reused.
ST   recording diffraction ***grating*** ***glass*** ; iron ***glass*** ***grating*** laser UV
IT   ***Color*** ***centers***
       (in iron-activated silicate ***glass*** induced by laser radiation, for recording diffraction ***gratings***)
IT   ***Glass*** , oxide
     RL: PRP (Properties)
       (iron-activated, for recording diffraction ***gratings*** , using UV laser radiation)
IT   Laser radiation, chemical and physical effects
       (recording of diffraction ***grating*** in iron-activated ***glass*** using)
IT   Diffraction ***gratings***
       (recording of, in iron-activated silicate ***glass*** using UV laser radiation)
IT   7439-89-6, uses and miscellaneous
     RL: USES (Uses)
       (***glass*** activated by, for recording diffraction ***gratings*** , using UV laser radiation)

L3   ANSWER 39 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1976:143020 CAPLUS
DN   84:143020
ED   Entered STN: 12 May 1984
TI   Recording of ***holograms*** on radiation ***color*** ***centers*** in ***glass***
AU   Bukharev, A. A.; Shtyrkov, N. I.; Yafaev, N. R.
CS   Kazan. Fiz.-Tekh. Inst., Kazan, USSR
SO   Pis'ma v Zhurnal Tekhnicheskoi Fiziki (1975), 1(21), 975-7
     CODEN: PZTFDD; ISSN: 0320-0116
DT   Journal
LA   Russian
CC   74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB   The exposure to .gamma. rays or to uv radiation of K-B ***glass*** (with high concn. of K2O) forms ***color*** ***centers*** and the ***glass*** becomes light sensitive. Decolorization of the ***centers*** can be effected with a He-Ne laser and thus the ***glass*** is usable for reversal recording of ***holograms*** . A max. diffraction efficiency of 0.3% with an exposure of 35 J/cm2 can be obtained and the recorded ***holograms*** may be stored in darkness for several hr. After heating at 300.degree. and repeated .gamma.-ray irradn., the ***glass*** is ready for rerecording.
ST   boron potassium ***glass*** ***holog*** recording
IT   ***Glass***
     RL: USES (Uses)
       (boron-potassium, with radiation-induced ***color*** ***centers*** of ***holog*** . recording)
IT   Gamma ray, chemical and physical effects
     Ultraviolet light, chemical and physical effects
       (***color*** ***center*** formation by, in boron-potassium ***glass*** for ***holog*** . recording)
IT   ***Color*** ***centers***
       (formation of, in boron-potassium ***glass*** by .gamma.- or uv-radiation for ***holog*** . recording)
IT   ***Holography***
       (recording materials for, boron-potassium ***glass*** with radiation-induced ***color*** ***centers*** as)

IT 12136-45-7
RL: USES (Uses)
(light-sensitive ***glass*** contg. boron and, with ***color*** ***centers*** for ***holog*** . recording)
IT 7440-42-8, uses and miscellaneous
RL: USES (Uses)
(light-sensitive ***glass*** , contg. potassium oxide and, with ***color*** ***centers*** for ***holog*** . recording)

L3 ANSWER 40 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1973:551590 CAPLUS
DN 79:151590
ED Entered STN: 12 May 1984
TI Reversible ***holographic*** recording materials for optical information storage
AU Tubbs, M. R.
CS Dep. Phys., University of Warwick, Coventry, UK
SO Optics & Laser Technology (1973), 5(4), 155-61
CODEN: OLTCAS; ISSN: 0030-3992
DT Journal
LA English
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 73
AB The reversible ***holog*** . recording materials comprise photochromic, thermochromic, and elec. controlled categories. Photochromic materials can be of org. nature such as spiropyran derivs., but suffer from low sensitivity, fatigue, destructive read-out, and often high scatter. Exposures of 1-10 J/cm2 are required to record bleaching with 6330 .ANG. light. Inorg. photochromic materials such as CaF2(La), photochromic ***glass*** , LiNbO3(Fe,Mo), or ***color*** - ***center*** materials based on the reversible conversion of F to F' ***centers*** in alkali halides at low temps. have good fatigue resistance and fairly superior sensitivities and diffraction efficiencies as compared to org. materials. The best known thermochromic material is MnBi; others are EuO, VO2 and liq. crystals. Magnetic ***holograms*** have been recorded on thin films of MnBi by exposure to interference patterns generated by a pulsed ruby laser above the Curie point. On cooling below the Curie temp., the demagnetizing field of adjacent regions produces a reversal of magnetization in the pulse heated regions so that ***holograms*** can be read using the Faraday effect with nondestructive read-out; Curie temp. is 360.degree., decompn. temp. 444.degree.. EuO has a Curie temp. of 69.degree.K. Relatively permanent ***holograms*** can be recorded on VO2 films maintained close to insulator-metal transition temp. of 63.degree.. Elec. controlled materials consist of a photoconductor and elec. field sensitive material sandwiched between transparent electrodes, such as a ZnSe layer and a Bi4Ti3O12 crystal.
ST ***holog*** recording reversible; information retrieval ***holog***
IT ***Holography***
(recording materials for, reversible)
IT Information science
(storage, reversible ***holography*** recording materials for optical)

L3 ANSWER 41 OF 41 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1972:533128 CAPLUS
DN 77:133128
ED Entered STN: 12 May 1984
TI Kinetics of phototropic ***glasses*** of the silverhalide-type and the possibilities of their application as computer memories
AU Gliemeroth, G.
CS Jenaer Glaswerk Schott Genossen, Mainz, Fed. Rep. Ger.
SO Front. Glass Sci. Technol., Proc. Annu. Meet. Int. Comm. Glass (1970), Meeting Date 1969, 63-8. Editor(s): Bateson, S. Publisher: Int. Comm. Glass, Sheffield, Engl.
CODEN: 25JGAS
DT Conference; General Review
LA English
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB A review with 8 refs., on the possible use of ***holograms*** in phototropic Ag-halide type ***glasses*** as optical memories for information storage in computers, includes discussion of: the kinetics of the darkening and stability of 3-dimensional ***holog*** . pictures in

phototropic ***glasses*** , and relations between the growth of
phototropism and the phase sepn. of Ag-halide-rich ***color***
centers .
ST review phototropic ***glass*** ***holog*** ; optical memory
computer review; information storage ***holog*** review; kinetics
phototropism ***holog*** review; silver halide ***holog*** review
IT Computers
(memory devices for, photochromic silver halide ***glasses*** for)
IT Photochromism
(of silver halide-contg. ***glasses*** , kinetics of)
IT Memory devices
(optical, photochromic silver halide ***glasses*** for, for
computers)
IT Silver halides
RL: USES (Uses)
(photochromism of ***glasses*** contg., kinetics of)
IT ***Holography***
(recording materials for, photochromic silver halide ***glasses***
as)

=> d his

(FILE 'HOME' ENTERED AT 12:40:35 ON 17 FEB 2006)

FILE 'CAPLUS' ENTERED AT 12:40:42 ON 17 FEB 2006
L1 1530 S COLOR AND (CENTER OR CENTRE) AND GLASS?
L2 53928 S (GRATING OR HOLOGRA?)
L3 41 S L1 AND L2

=> s l1 and (bleach? or decoloriz? or decolouriz?)
79471 BLEACH?
33406 DECOLORIZ?
51 DECOLOURIZ?
L4 129 L1 AND (BLEACH? OR DECOLORIZ? OR DECOLOURIZ?)

=> s l4 not l2
L5 124 L4 NOT L2

=> d all 1-124

L5 ANSWER 1 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1348805 CAPLUS
ED Entered STN: 29 Dec 2005
TI Effect of Gamma Radiation on Optical and EPR Absorption Spectra of
Phosphate and Fluoride ***Glasses*** Containing Lead
AU Bocharova, T. V.; Karapetyan, G. O.
CS St. Petersburg State Polytechnical University, Politekhnicheskaya ul. 29,
St. Petersburg, 195251, Russia
SO Glass Physics and Chemistry (2005), 31(6), 738-748
CODEN: GPHCEE; ISSN: 1087-6596
PB Pleiades Publishing, Inc.
DT Journal
LA English
CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The induced optical and EPR absorption spectra of phosphate and fluoride
glasses contg. lead are investigated. It is revealed that
exposure to gamma radiation leads to the formation of radiation-induced
defects responsible for the induced absorption band with a max. at
12500-13500 cm-1 and the EPR signal in the form of an almost sym. line
with a g factor of 1.999 and a linewidth of .apprxeq.26 Oe. Anal. of the
intensities of the absorption bands and the EPR signals in the spectra of
glasses with low terbium, tin, and carbon contents and the study
of their thermal ***bleaching*** demonstrate that the ***color***
centers are electron traps, whereas the paramagnetic
centers are hole-trapping ***centers*** . Examn. of the change
in the parameters of the absorption bands in the spectra of
glasses with different R 2O contents (R = Na, K, Rb, Cs) makes it
possible to det. the location of the ***color*** ***centers***
assocd. with the Pb+ ions in the structure. It is established that the
glasses under investigation are characterized by the nonlinear
absorption of radiation at a wavelength of 1.06 .mu.m. The mechanism of

formation of radiation-induced defects is considered.

L5 ANSWER 2 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:710646 CAPLUS
DN 143:375810
ED Entered STN: 10 Aug 2005
TI Infrared femtosecond laser induced visible coloration on heavy germanate ***glasses*** containing multivalent tin ions
AU Chen, Guorong; Zhao, Donghui; Fang, Xia; Yang, Yunxia; Qiu, Jianrong; Jiang, Xiongwei; Hirao, Kazuyuki
CS Institute of Inorganic Materials, School of Materials Science and Engineering, East China University of Science and Technology, Shanghai, 200237, Peop. Rep. China
SO International Congress on Glass, Proceedings, 20th, Kyoto, Japan, Sept. 27-Oct. 1, 2004 (2004), 14.054/1-14.054/6. Editor(s): Yoko, Toshinobu. Publisher: Ceramic Society of Japan, Tokyo, Japan.
CODEN: 69GMZQ; ISBN: 4-931298-43-5
DT Conference; (computer optical disk)
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57
AB Formation of IR femtosecond laser induced ***color*** ***centers*** in heavy germanate ***glasses*** with and without multivalent Sn ions was studied. Irradn. damage is evaluated by using irradn. induced absorption coeff. (RIAC) .mu. (.lambda.). Thermal ***bleaching*** procedure is included for showing recovery behavior of ***glasses*** . Three-dimensional yellowish block remained after scanning with the appearance of broad absorption bands in the absorption spectra peaking at 380 nm and extending to the longer wavelengths. Involvement of Sn cations is assocd. with the obsd. red shift of UV absorption edge, suppression of both hole and electron ***centers*** absorptions, and enhancement of the thermal recovery.
ST IR laser coloration heavy germanate ***glass*** tin dopant
IT Annealing
Color ***centers***
UV and visible spectra
(IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT ***Glass*** , properties
RL: PRP (Properties)
(germanate; IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT IR laser radiation
(irradn.; IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT Coloring
(laser; IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT 22537-50-4, Tin(4+), properties 22541-90-8, Tin (2+), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT 7440-31-5, Tin, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(germanate ***glasses*** doped with; IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
IT 1304-28-5, Barium oxide, occurrence 1310-53-8, Germanium oxide, occurrence 12036-41-8, Terbium oxide 12064-62-9, Gadolinium oxide (Gd2O3) 21651-19-4, Tin oxide (SnO)
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(***glass*** contg.; IR femtosecond laser induced visible coloration on heavy germanate ***glasses*** contg. multivalent tin ions)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Chen, G; Am Ceram Soc Bull 2001, V80(4), P107 CAPLUS
(2) Chen, G; Chin Phys Lett 2003, V20(11), P1997
(3) Chen, G; J Non-Crystalline Solids 2003, V326-327, P343
(4) Chen, G; SPIE 2003, V5061, P227 CAPLUS
(5) Duffy, J; J Non-Cryst Solids 1976, V21, P373 CAPLUS

(6) Ebendorff-Heidepriem, H; Optical Materials 2000, V15, P7 CAPLUS
(7) Ehrt, D; Proc Int Congr Glass 2001, V1, P84
(8) Qiu, J; Appl Phys Lett 1997, V71(1), P43 CAPLUS
(9) Qiu, J; Jpn J Appl Phys 1999, V38, PL649 CAPLUS
(10) Wang, S; Nucl Instr and Meth Phys Res B 2003, V201/3, P475
(11) Williams, R; CRC Handbook of Laser Science and Technology, Optical
Materials: Part 1 1986, VIII, P299

L5 ANSWER 3 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:710162 CAPLUS
ED Entered STN: 10 Aug 2005
TI Stability of the photo-induced coloration in ***glasses*** and its
application to easily recyclable colored ***glass*** products
AU Kadono, Kohei; Yamashita, Masaru; Akai, Tomoko; Itakura, Nobuyuki;
Matsumoto, Yoshinobu; Yazawa, Tetsuo
CS National Institute of Advanced Industrial Science and Technology, Ikeda,
Osaka, 563-8577, Japan
SO International Congress on Glass, Proceedings, 20th, Kyoto, Japan, Sept.
27-Oct. 1, 2004 (2004), 05.009/1-05.009/6. Editor(s): Yoko, Toshinobu.
Publisher: Ceramic Society of Japan, Tokyo, Japan.
CODEN: 69GMZQ; ISBN: 4-931298-43-5
DT Conference; (computer optical disk)
LA English
CC 57 (Ceramics)
AB In order to develop easily recyclable colored ***glasses*** , we
studied the coloration of soda-lime silicate ***glasses*** by excimer
laser or X-ray irradn. In visible region, absorption bands at 620 nm
(1.98 eV) and 430 nm (2.76 eV) appeared after the laser irradn. as well as
X-ray irradiated ***glasses*** while absorption ***bleaching*** in
UV region was obsd. for KrF (248 nm) and XeF (351 nm) laser irradn. The
stability of the ***color*** in visible region for X-ray irradiated
glasses was analyzed by a model in which recombination of
non-bridging oxygen hole ***centers*** and trapped electrons occurs by
thermal excitation of the electrons.
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; NEDO Activity Report for Industrial Technology Programs (FY2002) 2003
(2) Benatar, L; J Appl Phys 1993, V73, P8659 CAPLUS
(3) Friebele, E; Optical Properties of Glasses 1991, P244
(4) Saito, R; Solid State Commun 1987, V63, P625 CAPLUS

L5 ANSWER 4 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:513275 CAPLUS
DN 143:201853
ED Entered STN: 15 Jun 2005
TI Photo- ***bleaching*** of self-trapped holes in SiO2 ***glass***
AU Wang, R. P.; Saito, K.; Ikushima, A. J.
CS Research Center for Advanced Photon Technology, Toyota Technological
Institute, Tempaku, Nagoya, 468-8511, Japan
SO Journal of Non-Crystalline Solids (2005), 351(19&20), 1569-1572
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier B.V.
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 77
AB Photo-induced ***bleaching*** of self-trapped holes (STH) in
UV-irradiated synthetic SiO2 was studied by the ESR method. The authors
obsd. two kinds of STH, STH1 and STH2 as assigned by Griscom in Ref. [D.L.
Griscom, Phys. Rev. B 40(1989) 4224]. The decay of all the spectral
features was found to follow a stretched exponential function; and those
features with the similar decay behavior were assigned to the same defect.
The decay time obtained from the averaged fitting value for STH1 is
.apprx.4 times longer than that for STH2. Also, the sepd. STH1 and STH2
signals were exptl. obtained for the 1st time from the different decay
times for each of two kinds of STHs.
ST photo ***bleaching*** self trapped hole silica ***glass*** ESR
spectra
IT ***Color*** ***centers***
ESR (electron spin resonance)
Hole (electron)

(photo- ***bleaching*** of self-trapped holes in SiO2 ***glass***
)
IT 60676-86-0, Vitreous silica
RL: PRP (Properties)
(photo- ***bleaching*** of self-trapped holes in SiO2 ***glass***
)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Chernov, P; Phys Status Solidi B 1989, V155, P663
(2) Ediger, M; J Phys Chem 1996, V100, P13200 CAPLUS
(3) Edwards, A; Phys Rev Lett 1993, V71, P3190 CAPLUS
(4) Edwards, A; Structure and Imperfections in Amorphous and Crystalline Silicon Dioxide 2000
(5) Griscom, D; Appl Phys Lett 1997, V71, P175 CAPLUS
(6) Griscom, D; Glass Science and Technology 1990
(7) Griscom, D; J Non-Cryst Solids 1992, V149, P137 CAPLUS
(8) Griscom, D; Phys Rev B 1989, V40, P4224 CAPLUS
(9) Ikushima, A; J Appl Phys 2000, V88, P12014
(10) Poole, C; Electron Spin Resonance 1996
(11) Yamaguchi, M; Phys Rev B 2003, V68, P153204

L5 ANSWER 5 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:335644 CAPLUS
DN 144:25799
ED Entered STN: 20 Apr 2005
TI Optical ***decolorization*** of radiation-colored ***glasses*** during simulation of space conditions
AU Akishin, A. I.; Tseplyaev, L. I.
CS NIIYaF, MGU, Moscow, Russia
SO Fizika i Khimiya Obrabotki Materialov (2004), (6), 30-33
CODEN: FKOMAT; ISSN: 0015-3214
PB Interkontakt Nauka
DT Journal
LA Russian
CC 57-1 (Ceramics)
AB Degrdn. of optical ***glasses*** transmission under the action of radiation-induced ***color*** ***centers*** produced by varied kinds of ionizing radiation as well as a radiation coloring and optical ***decolorization*** effects in these ***glasses*** under the action of high-pressure xenon lamp light were investigated. Fluence dependencies of the ***glasses*** radiation darkening were found for the cases of electron, proton, and x-ray irradn. Data on radiation darkening relaxation in the ***glasses*** are obtained.
ST optical ***decolorization*** radiation colored ***glass*** simulation space
IT ***Decolorization***
(optical ***decolorization*** of radiation-colored ***glasses*** during simulation of space conditions)
IT Optical ***glass***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(optical ***decolorization*** of radiation-colored ***glasses*** during simulation of space conditions)

L5 ANSWER 6 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:594260 CAPLUS
DN 142:164593
ED Entered STN: 26 Jul 2004
TI ***Color*** - ***center*** generation and refractive index change in optical ***glass*** generated by infrared femtosecond laser pulse
AU Cheng, Guanghua; Liu, Qin; Wang, Yishan; Yu, Lianjun; Zhao, Wei; Chen, Guofu
CS State Key Laboratory of Transient Optics and Technology, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an, 710068, Peop. Rep. China
SO Guangzi Xuebao (2004), 33(4), 412-415
CODEN: GUXUED; ISSN: 1004-4213
PB Kexue Chubanshe
DT Journal
LA Chinese
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 57
AB The ***color*** - ***center*** is generated in ZBaF15 optical ***glass*** by near-IR femtosecond laser pulse coming from Ti:sapphire regenerative amplifier, and is ***bleached*** after annealing of the sample about 200.degree.C. The absorption spectrum and refractive index change are measured at above processes, they show a obvious different thermal stabilities between ***color*** - ***center*** and the induced refractive index change, suggesting the mechanism of refractive index change induced by femtosecond laser pulse is different from that of the generation of ***color*** - ***center*** . The 10% transmission in ultra-violet region is obsd. in the ***color*** - ***center*** region, and involving mechanism and potential application are discussed too.
ST ***color*** ***center*** generation refractive index change optical ***glass*** generated
IT Optical ***glass***
RL: PRP (Properties)
(ZBaF 15; ***color*** - ***center*** generation and refractive index change in optical ***glass*** generated by IR femtosecond laser pulse)
IT UV and visible spectra
(absorption; ***color*** - ***center*** generation and refractive index change in optical ***glass*** generated by IR femtosecond laser pulse)
IT ***Color*** ***centers***
Refractive index
(***color*** - ***center*** generation and refractive index change in optical ***glass*** generated by IR femtosecond laser pulse)
IT IR laser radiation
(near-IR; ***color*** - ***center*** generation and refractive index change in optical ***glass*** generated by IR femtosecond laser pulse)

L5 ANSWER 7 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:974148 CAPLUS
DN 140:167907
ED Entered STN: 15 Dec 2003
TI Effect of different treatments on decay of radiation-induced ***color*** ***centers*** in potassium lead silicate ***glass***
AU Borgman, V. A.
CS Russia
SO Glass Physics and Chemistry (Translation of Fizika i Khimiya Stekla) (2003), 29(6), 537-540
CODEN: GPHCEE; ISSN: 1087-6596
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 74
AB The influence of short-term heating or cooling and exposure to visible light on the ***bleaching*** of a gamma-irradiated ***glass*** stored at 20.degree. was investigated by photometry. The decay of radiation-induced ***color*** ***centers*** is retarded under the action of heating and gradually regains its initial rate after the heating ceases. The transient stage can be described as relaxation. Isothermal photobleaching does not exhibit a similar aftereffect.
ST potassium lead ***glass*** radiation ***color*** ***center*** decay heat treatment
IT Cooling
Heat treatment
(effect of different treatments on decay of radiation-induced ***color*** ***centers*** in potassium lead silicate ***glass***)
IT Lead ***glasses***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(effect of different treatments on decay of radiation-induced ***color*** ***centers*** in potassium lead silicate ***glass***)
IT Light
(irradn.; effect of different treatments on decay of radiation-induced

color ***centers*** in potassium lead silicate
glass)
IT ***Color*** ***centers***
Defects in solids
(radiation-induced; effect of different treatments on decay of
radiation-induced ***color*** ***centers*** in potassium lead
silicate ***glass***)
IT 1314-13-2, Zinc oxide, uses 7440-38-2, Arsenic, uses
RL: MOA (Modifier or additive use); USES (Uses)
(effect of different treatments on decay of radiation-induced
color ***centers*** in potassium lead silicate
glass)
IT 1317-36-8, Lead monoxide, processes 12136-45-7, Potassium oxide,
processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(effect of different treatments on decay of radiation-induced
color ***centers*** in potassium lead silicate
glass)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Borgman, V; Fiz Khim Stekla 1985, V11(2), P211
(2) Borgman, V; Steklo Keram 1984, 2, P12
(3) Glebov, L; Fiz Khim Stekla 1986, V12(3), P345
(4) Hedden, W; Am Ceram Soc 1960, V43(8), P413
(5) Levy, M; Proc Phys Soc London, Sect B 1955, V68(424), P223
(6) Mazurin, O; Svoistva i razrabotka novykh opticheskikh stekol (Properties
and Design of New Optical Glasses) 1977, P101 CAPLUS

L5 ANSWER 8 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:632105 CAPLUS
DN 140:239386
ED Entered STN: 15 Aug 2003
TI Coloration and decoloration of ***glasses*** by photoirradiation and
heat treatment for easily recycled ***glass*** products
AU Kadono, Kohei; Akai, T.; Yamashita, M.; Sheng, J.; Chen, S.; Yao, Z.;
Itakura, N.; Yamate, T.; Utagawa, Y.; Matsumoto, Y.; Yazawa, T.
CS Special Division of Green Life Technology, National Institute of Advanced
Industrial Science and Technology, Osaka, 563-8577, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering
(2003), 5061(Photonic Glass (ISPG 2002)), 156-163
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal; General Review
LA English
CC 57-0 (Ceramics)
Section cross-reference(s): 74
AB A review. The authors have been developing a technique of coloration and
decoloration of ***glasses*** by photoirradn. and heat-treatment for
application to easily recyclable colored ***glass*** products. The
mechanisms of the photoinduced coloration of ***glasses*** used in
this research are: (1) the photoinduced defects (***color***
centers) formation, (2) the photoinduced change in oxidn. state of
ions, and (3) the photoinduced formation of nanoparticles in
glasses . The subjects for application of these phenomena to
recyclable colored- ***glass*** products are presented. The research
examples for each mechanism are presented in this paper as follows: (a)
the effect of the doped Fe ions on the optical d. and stability of
coloration due to ***color*** ***centers*** , (b) the coloration by
the change in oxidn. state, Mn2+ .fwdarw. Mn3+, and (c) the reversible
coloration and decoloration for an Ag single-doped ***glass*** . A
review.
ST review coloration decoloration ***glass*** photoirradn heat treatment
recycled product
IT Heat treatment
Radiation chemistry
Redox reaction
X-ray
(coloration and decoloration of ***glasses*** by photoirradn. and
heat treatment or re-melting for recycled ***glass*** products)
IT ***Glass*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical

process); PROC (Process)
(coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products)
IT Photochromic ***glass***
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products in relation to)
IT Recycling
(***glass*** ; coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products)
IT ***Color*** ***centers***
Coloring
Decolorization
(photoinduced; coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products)
IT Oxidation
(radiation-induced; coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products)
IT 7440-22-4, Silver, processes 14701-21-4, Silver(1+), processes 15438-31-0, Iron(2+), processes 16397-91-4, Manganese(2+), processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(coloration and decoloration of ***glasses*** by photoirradn. and heat treatment or re-melting for recycled ***glass*** products)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; http://www.glass-recycle-as.gr.jp/index.html
(2) Chen, S; Appl Phys Lett 2001, V79, P3687 CAPLUS
(3) Chen, S; Chem Comm 2001, P2090 CAPLUS
(4) Sakka, S; "Glass Handbook" in Japanese 1975
(5) Sheng, J; Appl Rad Isotopes 2002, V56, P621 CAPLUS
(6) Sheng, J; Phys Chem Glasses, in press
(7) Uhlmann, D; Optical Properties of Glasses 1991
(8) Weyl, W; Coloured Glasses 1951

L5 ANSWER 9 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:438773 CAPLUS
DN 139:140176
ED Entered STN: 09 Jun 2003
TI Optical properties of gamma irradiated soda-lime silicate ***glasses*** exchanged with copper
AU Macalik, B.
CS Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, 50-950, Pol.
SO Radiation Effects and Defects in Solids (2003), 158(1-6), 403-406
CODEN: REDSEI; ISSN: 1042-0150
PB Taylor & Francis Ltd.
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The effect of Cu ion exchange upon the optical absorption and room temp. gamma coloration of soda lime silicate ***glasses*** was studied. After ion exchange performed at 720 K, Cu ions substitute mainly the alkali ions and do modify the optical absorption spectra of the specimens. Gamma irradn. does not induce the formation of colloidal Cu. Also, the coloration process itself is independent of the presence of Cu ions. The generated ***color*** ***centers*** are rather related to the presence of Na and K ions. The optical ***bleaching*** by the UV light occurs in two stages. First disappear ***centers*** related to the Na-type defects and next those related to the K-type defects.
ST optical property gamma irradiated soda lime silicate ***glass*** ; copper exchanged ***glass*** absorption spectra
IT Radiation
(damage; optical properties of gamma irradiated soda-lime silicate ***glasses*** exchanged with copper)
IT Gamma ray

(irradn.; optical properties of gamma irradiated soda-lime silicate
glasses exchanged with copper)
IT IR spectra
Ion exchange
Trapping
UV and visible spectra
(optical properties of gamma irradiated soda-lime silicate
glasses exchanged with copper)
IT Silicate ***glasses***
Soda-lime ***glasses***
RL: PRP (Properties)
(optical properties of gamma irradiated soda-lime silicate
glasses exchanged with copper)
IT 7440-50-8, Copper, properties 14701-21-4, Silver(1+), properties
17493-86-6, Copper(1+), properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(optical properties of gamma irradiated soda-lime silicate
glasses exchanged with copper)
IT 7758-89-6, Copper chloride cu2cl2
RL: RCT (Reactant); RACT (Reactant or reagent)
(optical properties of gamma irradiated soda-lime silicate
glasses exchanged with copper)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bamford, C; Phys Chem Glasses 1962, V3, P189 CAPLUS
(2) Berg, K; Proceedings of the XXI International Conference on Defects in
Insulating Materials, 1992 1993, P914
(3) Macalik, B; to be published
(4) Mackey, J; J Phys Chem Solids 1966, V27, P1759 CAPLUS
(5) Morawska-Kowal, T; NIM B 2000, V166-167, P490
(6) Suszynska, M; NIM B 2001, V179, P383 CAPLUS

L5 ANSWER 10 OF 124 CAPLUS
AN 2003:417037 CAPLUS
DN 139:140623
ED Entered STN: 01 Jun 2003
TI Tuning the emission ***color*** of conjugated organic materials by
photochemical reactions
AU Trattnig, G.; Langer, G.; Pogantsch, A.; Kern, W.; Horhold, H.-H.;
Tillmann, H.; Scherf, U.; Zojer, E.
CS Advanced Materials Division, Institut fur Festkorperphysik, Technische
Universitat Graz, Graz, A-8010, Austria
SO Synthetic Metals (2003), 137(1-3), 1027-1028
CODEN: SYMEDZ; ISSN: 0379-6779
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 36, 74
AB In this contribution the authors study the energy transfer efficiency in
blend films consisting of poly(fluorene) (PF) as host and a
poly(para-phenylenevinylene) (PPV) deriv. as guest materials. The
emission properties of the blend system can be efficiently tuned using a
photoreaction with gaseous hydrazine. This is due to a photobleaching of
the PPV type polymer, which results in a reduced energy transfer
efficiency as a consequence of the breaking of .pi.-conjugation. In
contrast to oxidative ***bleaching*** the creation of nonradiative
recombination ***centers*** is of minor importance.
ST tuning emission ***color*** conjugated org material photochem reaction
IT Polymers, properties
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
engineering or chemical process); PRP (Properties); PROC (Process); USES
(Uses)
(conjugated; tuning the emission ***color*** of conjugated org.
materials by photochem. reactions)
IT Energy transfer
Glass substrates
Luminescence
Luminescence, electroluminescence
Nonradiative energy transfer
Photochemical ***bleaching***

(tuning the emission ***color*** of conjugated org. materials by photochem. reactions)

IT 138184-36-8, MEH-PPV 188201-14-1

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(blends; tuning the emission ***color*** of conjugated org. materials by photochem. reactions)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Arvis, M; J Phys Chem 1974, V78, P1356 CAPLUS
(2) Hussin, D; Proc R Soc London, Ser A 1963, V273, P145
(3) Kavc, T; Mat Res Soc Fall Meeting 2001, proceedings Symposium BB, in print
(4) List, E; Adv Mat 2002, V14(5), P374 CAPLUS
(5) List, E; Jpn J Appl Phys 2000, V39, PL760 CAPLUS
(6) Nothofer, H; Flussigkristalline Polyfluorene 2001
(7) Pfeiffer, S; Macromol Chem Phys 1999, V200, P1870 CAPLUS
(8) Ramsay, D; J Phys Chem 1953, V57, P415 CAPLUS
(9) Streitwieser, A; Organische Chemie, 2nd edition 1994, P406
(10) Vaghijani, G; J Chem Phys 1993, V98(3), P2123
(11) Wenner, R; J Am Chem Soc 1932, V54, P2787 CAPLUS

AN 2003:33444 CAPLUS

DN 138:409251

ED Entered STN: 15 Jan 2003

TI Interface models for the photochromism and thermochromism of ***glasses*** with nanocrystals

AU Kraevskii, S. L.; Solinov, V. F.

CS Institute of Technical Glass, Moscow, 117218, Russia

SO Journal of Non-Crystalline Solids (2003), 316(2,3), 372-383
CODEN: JNCSBJ; ISSN: 0022-3093

PB Elsevier Science B.V.

DT Journal

LA English

CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB A study was made of the (UV, X-ray)/temp. induced absorption spectra of ***glasses*** with AgCl or CuCl nanocrystals. New models are proposed for photochromic and thermochromic effects in these ***glasses*** . ***Bleaching*** of the photochromic CuCl- ***glass*** after irradn. goes synchronously with diminishing of the burned out spectral hole's depth. The CuCl nanocrystal exciton dissocn. due to the Coulomb field of carriers injected into traps at the ***glass*** /nanocrystal interface can account for this spectral hole burning. The photochromic induced spectra display excellent fit with the bands of well-known silicate ***glass*** radiation ***color*** ***centers*** . Trap parameters at the interface are estd. In case of the thermochromic spectra, the transformation at temps. above nanocrystal melting temps. of a two-band absorption spectrum into a single narrow band is considered a unique argument for Mie Theory application. The data are interpreted in terms of a new model that involves reversible transformation of oblate spheroid silver metal particles to continuous silver coating at the inside surface of a cavity contg. a nanocrystal or its melt.

ST interface model photochromism thermochromism ***glass*** silver copper chloride nanocrystal

IT Borate ***glasses***

RL: PRP (Properties)

(aluminum lithium oxide; interface models for photochromism and thermochromism of ***glasses*** with nanocrystals)

IT Borate ***glasses***

RL: PRP (Properties)

(boron lanthanum titanium oxide; interface models for photochromism and thermochromism of ***glasses*** with nanocrystals)

IT ***Color*** ***centers***

Photochromism

Solid-solid interface

Spectral hole burning

Thermochromism

(interface models for photochromism and thermochromism of ***glasses*** with nanocrystals)

IT Borosilicate ***glasses***

RL: PRP (Properties)
(interface models for photochromism and thermochromism of ***glasses*** with nanocrystals)
IT 7758-89-6, Copper chloride 7783-90-6, Silver chloride, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(dopant; interface models for photochromism and thermochromism of ***glasses*** with nanocrystals)
RE.CNT 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Adirovich, E; Some Problems of the Theory of Luminescence in Crystals 1956
(2) Ahmed, A; Phys Chem Glasses 1984, V25, P22 CAPLUS
(3) Ahmed, A; Proceedings of the XVI International Congress on Glass 1992, P503
(4) Anikin, A; J Non-Cryst Solids 1979, V34, P393 CAPLUS
(5) Armistead, W; Science 1964, V144, P150 CAPLUS
(6) Artamonova, M; Private information
(7) Borelli, N; J Appl Phys 1988, V63, P2756
(8) Caccavale, F; Proceedings of the XVI International Congress on Glass 1992, V4, P205
(9) Feldmann, T; J Chem Phys 1963, V39, P1352 CAPLUS
(10) Ferley, L; J Non-Cryst Solids 1987, V92, P107 CAPLUS
(11) Gagarin, A; All-USSR Symposium Inorganic Materials with Controllable Transmission 1978, P59
(12) Gans, R; Ann Phys 1915, V47, P270 CAPLUS
(13) Ghoneim, N; Phys Chem Glasses 1985, V26, P55 CAPLUS
(14) Glebov, L; Sov J Glass Phys Chem 1976, V2, P346 CAPLUS
(15) Gracheva, L; Sov J Glass Phys Chem 1978, V4, P192 CAPLUS
(16) Jain, R; J Opt Soc Am 1983, V73, P647 CAPLUS
(17) Kraevskii, S; Glass Phys Chem 1994, V20, P199
(18) Kraevskii, S; Glass Phys Chem 1994, V20, P484
(19) Kraevskii, S; Glass Phys Chem 1997, V23(3), P198 CAPLUS
(20) Kraevskii, S; Glass Phys Chem 1997, V23, P74 CAPLUS
(21) Kraevskii, S; Glass Phys Chem 1998, V24, P501 CAPLUS
(22) Kraevskii, S; Glass Phys Chem 1999, V25, P151 CAPLUS
(23) Kraevskii, S; Glass Phys Chem 2000, V26, P196
(24) Kraevskii, S; Glass Phys Chem 2001, V27, P473
(25) Kraevskii, S; Glass Phys Chem, to be published
(26) Kraevskii, S; Sov J Glass Phys Chem 1987, V13, P709 CAPLUS
(27) Mackey, J; J Phys Chem Solids 1966, V27, P1755
(28) Moriya, Y; X International Congress on Glass 1974, Pt5, P53
(29) Morrison, S; The Chemical Physics of Surfaces 1977
(30) Nizovtsev, V; Izv Akad Nauk SSSR, Neorg Mater 1976, V12, P747 CAPLUS
(31) Randall, L; US 3734754 1973
(32) Trotter, D; J Appl Phys 1982, V53, P4657 CAPLUS
(33) Tsekhomsky, V; Sov J Glass Phys Chem 1878, V4, P1
(34) Woggon, W; Phys Status Solidi 1990, V160, Pk70
(35) Yokota, R; Phys Rev 1954, V95, P1145 CAPLUS
(36) Yokota, R; Phys Rev 1954, V93, P869

L5 ANSWER 12 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:922725 CAPLUS
DN 138:191670
ED Entered STN: 05 Dec 2002
TI Postirradiation Behavior of Rare-Earth-Activated Fluoroaluminate ***Glasses***

AU Bocharova, T. V.; Karapetyan, G. O.; Tagil'tseva, N. O.; Khalilev, V. D.
CS St. Petersburg State Technical University, St. Petersburg, 195251, Russia

SO Inorganic Materials (Translation of Neorganicheskie Materialy) (2002), 38(12), 1302-1308
CODEN: INOMAF; ISSN: 0020-1685
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 70, 73

AB The induced absorption and ESR (EPR) spectra of gamma-irradiated fluoroaluminate ***glasses*** activated with Eu^{3+} and Ce^{3+} are studied. The ***bleaching*** kinetics in ***glasses*** contg. 0.001-0.1 mol% Eu_2O_3 are analyzed in terms of a capture-vol. model. Eu^{3+} is shown to act as a protector ion, suppressing the induced absorption in the fluoroaluminate ***glasses*** . The introduction of CeF_3 stabilizes the ***color*** ***centers*** responsible for the induced absorption in the visible range. The effects of gamma irradn. and

subsequent heat treatment on the EPR spectra of the ***glasses*** contg. Ce, Tb, and Eu are analyzed. The shape of the central resonance (CR line) in the EPR spectra of the heat-treated samples is shown to depend on the nature of the rare-earth-related trapping ***center*** . The EPR data are interpreted under the assumption that the paramagnetic species responsible for the main component of the CR line are of a hole nature.

ST fluoroaluminate ***glass*** gamma irradn absorption ***bleaching*** rare earth dopant; cerium dopant fluoroaluminate ***glass*** gamma irradn absorption ***bleaching*** ; terbium dopant fluoroaluminate ***glass*** gamma irradn absorption ***bleaching*** ; europium dopant fluoroaluminate ***glass*** gamma irradn absorption ***bleaching***

IT Fluoride ***glasses***
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(fluoroaluminate, alk. earth yttrium fluoroaluminate; gamma-irradn.-induced absorption/ESR and ***bleaching*** kinetics of alk. earth yttrium fluoroaluminate ***glass*** contg. Ce, Tb, and Eu activators)

IT Absorption spectra
Color ***centers***
ESR (electron spin resonance)
Paramagnetic ***centers***
(gamma-irradn.-induced absorption/ESR and ***bleaching*** kinetics of alk. earth yttrium fluoroaluminate ***glass*** contg. Ce, Tb, and Eu activators)

IT 1308-96-9, Europium oxide (Eu2O3) 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7758-88-5, Cerium fluoride (CeF3) 12036-41-8, Terbium oxide (Tb2O3)
RL: MOA (Modifier or additive use); USES (Uses)
(dopant, fluoroaluminate ***glass*** ; gamma-irradn.-induced absorption/ESR and ***bleaching*** kinetics of alk. earth yttrium fluoroaluminate ***glass*** contg. Ce, Tb, and Eu activators)

IT 7783-40-6, Magnesium fluoride (MgF2) 7783-48-4, Strontium fluoride (SrF2) 7784-18-1, Aluminum fluoride (AlF3) 7787-32-8, Barium fluoride (BaF2) 7789-75-5, Calcium fluoride (CaF2), processes 13709-49-4, Yttrium fluoride (YF3)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(***glass*** , fluoroaluminate; gamma-irradn.-induced absorption/ESR and ***bleaching*** kinetics of alk. earth yttrium fluoroaluminate ***glass*** contg. Ce, Tb, and Eu activators)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anisonyan, L; Vsesoyuznoe soveshchanie po stroeniyu, svoistvam i primeneniyu fosfatnykh, ftoridnykh i khal'kogenidnykh stekol (All-Union Conf on the Structure, Properties, and Application of Phosphate, Flouride, and Chalcogenide Glasses) 1985, P41
(2) Arbuzov, V; Fiz Khim Stekla 1993, V19(3), P410 CAPLUS
(3) Arbuzov, V; Fiz Khim Stekla 1996, V22(3), P228
(4) Bocharova, T; Fiz Khim Stekla 1985, V11(1), P87 CAPLUS
(5) Bocharova, T; IV Vsesoyuznoe soveshchanie po vozdeistviyu ioniziruyushchego izlucheniya i sveta na geterogennye sistemy (IV All-Union Conf on the Effects of Ionizing Radiation and Light on Heterogeneous Systems) 1986, part 2, P12
(6) Bocharova, T; IX Mezhdunarodnaya konferentsiya po fizike dielektrikov, Dielektriki-2000 (IX Int Conf on the Physics of Dielectrics, Dielectrics-2000) 2000, V1, P168
(7) Bocharova, T; Inorg Mater (Engl Transl) V35(1), P78 CAPLUS
(8) Bocharova, T; Neorg Mater 1999, V35(1), P94
(9) Bogomolova, L; J Non-Cryst Solids 1999, V255(2/3), P149
(10) Bogomolova, L; Opt Mater 1996, 5, P311
(11) Dmitryuk, A; Fiz Khim Stekla 1993, V19(1), P33 CAPLUS
(12) Galimov, D; Izv Akad Nauk SSSR, Neorg Mater 1969, V5(8), P1386 CAPLUS
(13) Galimov, D; Izv Akad Nauk SSSR, Neorg Mater 1969, V5(10), P1807 CAPLUS
(14) Grigoryan, T; Proizvod Issled Stekol Silik Mater 1988, 9, P176
(15) Grishin, I; Fiz Khim Stekla 1984, V10(2), P252 CAPLUS
(16) Jiang, S; Opt Eng (Bellingham, Wash) 1998, V37(12), P3282 CAPLUS
(17) Karapetyan, G; Opt Spektrosk 1967, V22(3), P443 CAPLUS
(18) Karapetyan, K; Fiz Khim Stekla 1990, V16(5), P774 CAPLUS
(19) Kolobkov, V; Opt-Mekh Prom-st 1971, 3, P53 CAPLUS
(20) Naftaly, M; J Non-Cryst Solids 1999, V256/257, P248

(21) Stroud, J; J Chem Phys 1965, V43(7), P2442 CAPLUS

L5 ANSWER 13 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:921321 CAPLUS
DN 138:7443
ED Entered STN: 04 Dec 2002
TI Method for laser decoloring of colored ***glass***
IN Yamate, Takashi; Itakura, Nobuyuki; Nishikawa, Shinji; Tamon, Hiroyuki; Uemura, Hiroshi; Kakuno, Kohei; Akai, Tomoko; Yamashita, Masaru; Yazawa, Tetsuo
PA Central Glass Co., Ltd., Japan; Ministry of Economy, Trade and Industry; National Industrial Research Institute
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C03C023-00
ICS B41J002-44; B23K026-00
CC 57-1 (Ceramics)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002348147	A2	20021204	JP 2001-162147	20010530
PRAI	JP 2001-162147		20010530		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002348147	ICM	C03C023-00
	ICS	B41J002-44; B23K026-00
	IPCI	C03C0023-00 [ICM,7]; B41J0002-44 [ICS,7]; B23K0026-00 [ICS,7]

AB Decoloring of ***glass*** is carried out by irradn. of the colored ***glass*** with laser beam for heat transformation of the ***glass*** . Irradn. of laser beam is carried out using a laser irradn. app. comprising a laser oscillator, an optical modulator, a galvanometer mirror, lenses, etc. ***Glass*** marked (e.g. letters, bar codes, etc.) by the laser decoloring process are also claimed. The entire ***glass*** can also be easily decolored by their high-speed scanning with laser beam. Colored ***glass*** can be easily recycled by decoloring.
ST laser decoloring ***glass*** marking; recycling colored ***glass*** laser decoloring
IT ***Color*** ***centers***
(V, nonbridging oxygen; heat-evaporative decoloring of ***glass*** by laser irradn. for marking and for ***glass*** recycling)
IT Noble metals
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(colloids, ***glass*** colored with; heat-evaporative decoloring of ***glass*** by laser irradn. for marking and for ***glass*** recycling)
IT ***Decolorization***
Laser radiation
Marking
(heat-evaporative decoloring of ***glass*** by laser irradn. for marking and for ***glass*** recycling)
IT ***Glass*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(heat-evaporative decoloring of ***glass*** by laser irradn. for marking and for ***glass*** recycling)
IT Transition metals, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ions, ***glass*** colored with; heat-evaporative decoloring of ***glass*** by laser irradn. for marking and for ***glass*** recycling)
IT Recycling
(of ***glass*** ; heat-evaporative decoloring of ***glass*** by

laser irradn. for marking and for ***glass*** recycling)

L5 ANSWER 14 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:865770 CAPLUS
DN 138:43083
ED Entered STN: 15 Nov 2002
TI ***Glass*** coloring and decoloring technology by x-ray/UV laser irradiation and heating. Pursuit of manufacture of easily recyclable colored ***glass***
AU Kadono, Kohei; Akai, Tomoko; Yazawa, Tetsuo
CS Special Div. Green Life Technol., Natl. Inst. Adv. Ind. Sci. Technol., Ikeda, 563-8577, Japan
SO Kagaku to Kogyo (Tokyo, Japan) (2002), 55(11), 1249-1251
CODEN: KAKTAF; ISSN: 0022-7684
PB Nippon Kagakkai
DT Journal; General Review
LA Japanese
CC 57-0 (Ceramics)
AB A review on ***glass*** coloring based on (1) ***color*** ***center*** formation, e.g., visible light-absorbing nonbridging O hole ***center*** (NBOHC), (2) valence change of colorless ions, e.g, purple Mn3+ from colorless Mn2+, and (3) colored particle formation from colorless ions, e.g., Ag nanoparticle formation by x-ray irradn., for development of coloring of colorless ***glass*** and decoloring by heating of colored ***glass*** for easy recycling.
ST review ***glass*** coloring decoloring recycling
IT Coloring
Decolorization
Heat treatment
Recycling
UV laser radiation
X-ray
(***glass*** coloring and decoloring technol. by x-ray/UV laser irradn. and heating for manuf. of easily recyclable colored ***glass***)
IT ***Glass*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(***glass*** coloring and decoloring technol. by x-ray/UV laser irradn. and heating for manuf. of easily recyclable colored ***glass***)

L5 ANSWER 15 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:401493 CAPLUS
DN 137:158007
ED Entered STN: 29 May 2002
TI Coloration processes in soda-lime silicate ***glasses***
AU Macalik, B.; Morawska-Kowal, T.
CS Institute of Low Temperature and Structure Research, P.A.S., Wroclaw, 50-950, Pol.
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2002), 191, 379-381
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB The effect of mech. stretching upon room temp. .gamma. coloration of soda-lime silicate ***glasses*** has been investigated. Optical absorption measurements were performed to follow the formation and thermal ***bleaching*** of the induced ***color*** ***centers*** . It has been shown that the mech. deformation reduces the coloration effectivity and thermal stability of the created ***centers*** . It has been proposed that increase of the concn. of the non-bridging oxygens accelerate the ***bleaching*** processes.
ST ***color*** ***center*** thermal ***bleaching*** mech deformation soda lime ***glass***
IT ***Color*** ***centers***
(V, non-bridging oxygen; effect of mech. stretching deformation on ***color*** ***center*** thermal stability in soda-lime

glasses)
IT Thermal stability
(***color*** ***center*** ***bleaching*** ; effect of mech. stretching deformation on ***color*** ***center*** thermal stability in soda-lime ***glasses***)
IT ***Color*** ***centers***
Deformation (mechanical)
Optical absorption
(effect of mech. stretching deformation on ***color*** ***center*** thermal stability in soda-lime ***glasses***)
IT Soda-lime ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effect of mech. stretching deformation on ***color*** ***center*** thermal stability in soda-lime ***glasses***)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Berg, K; Proceedings of the ISE 1999, V10, P411
(2) Morawska-Kowal, T; Nucl Instr and Meth B 2000, V166, P490
(3) Suszynska, M; Nucl Instr and Meth B 2001, V179, P383 CAPLUS
(4) Yoshimura, E; Nucl Instr and Meth B 1998, V141, P304 CAPLUS

L5 ANSWER 16 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:375668 CAPLUS
DN 138:307651
ED Entered STN: 21 May 2002
TI Fluorescence spectroscopy of ***color*** ***centers*** generated in phosphate ***glasses*** after exposure to femtosecond laser pulses
AU Chan, James W.; Huser, Thomas; Hayden, Joseph S.; Risbud, Subhash H.; Krol, Denise M.
CS Lawrence Livermore National Laboratory, Livermore, CA, 94551, USA
SO Journal of the American Ceramic Society (2002), 85(5), 1037-1040
CODEN: JACTAW; ISSN: 0002-7820
PB American Ceramic Society
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB A confocal fluorescence microscopy setup was used to observe, in situ, spectral changes in phosphate ***glasses*** which were modified using 0.3 .mu.J of tightly focused 800 nm, 130 fs laser pulses. On 488 nm excitation, the modified ***glass*** shows a broad fluorescence centered at roughly 600 nm, which decays with prolonged exposure to the 488 nm light. The decay behavior is dependent on the 488 nm power, with a faster decay rate for higher powers. A mechanism whereby ***color*** ***centers*** , formed by the femtosecond pulses, fluoresce when excited by the 488 nm light and are simultaneously photo- ***bleached*** is proposed to explain the obsd. behavior.
ST fluorescence spectroscopy ***color*** ***center*** phosphate ***glass*** femtosecond laser pulse
IT Phosphate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(Ce-doped sodium aluminophosphate and lanthanum phosphate; fluorescence spectroscopy of ***color*** ***centers*** generated in phosphate ***glasses*** after exposure to femtosecond laser pulses)
IT Absorption spectra
Color ***centers***
Electronic structure
Laser induced fluorescence
Laser radiation
Optical fibers
Optical transmission
Relaxation
Waveguides
(fluorescence spectroscopy of ***color*** ***centers*** generated in phosphate ***glasses*** after exposure to femtosecond laser pulses)
IT Annealing
Photochemical ***bleaching***
(of ***color*** ***center*** defects; fluorescence spectroscopy of ***color*** ***centers*** generated in phosphate

glasses after exposure to femtosecond laser pulses)
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Archidi, M; Nucl Instrum Meth B 1996, V116, P145 CAPLUS
(2) Aslund, M; Opt Lett 2000, V25(10), P692 CAPLUS
(3) Corle, T; Confocal Scanning Optical Microscopy and Related Imaging Systems 1996
(4) Davis, K; Opt Lett 1996, V21(21), P1729 CAPLUS
(5) Efimov, O; J Opt Soc Am B 1998, V15(1), P193 CAPLUS
(6) Ehrt, D; J Non-Cryst Solids 2000, V263(264), P240
(7) Erdogan, T; J Appl Phys 1994, V76(1), P73
(8) Glezer, E; Appl Phys Lett 1997, V71(7), P882 CAPLUS
(9) Glezer, E; Opt Lett 1996, V21(24), P2023 CAPLUS
(10) Griscom, D; J Appl Phys 1983, V54(7), P3743 CAPLUS
(11) Hirao, K; J Non-Cryst Solids 1998, V239, P91 CAPLUS
(12) Homoelle, D; Opt Lett 1999, V24(18), P1311 CAPLUS
(13) Kannan, S; J Lightwave Technol 1997, V15(8), P1478 CAPLUS
(14) Kondo, Y; Opt Lett 1999, V24(10), P646 CAPLUS
(15) Laperle, P; Opt Lett 1997, V22(3), P178 CAPLUS
(16) Morgan, S; J Am Ceram Soc 1987, V70(12), PC-378
(17) Patel, F; Opt Soc Am Trends Opt Photonics Adv Solid-State Lasers 1999, V26, P172 CAPLUS
(18) Sandison, D; Appl Opt 1994, V33(4), P603
(19) Schaffer, C; Opt Lett 2001, V26(2), P93
(20) Sikorski, Y; Electron Lett 2000, V36(3), P226
(21) Skuja, L; J Non-Cryst Solids 1994, V179, P51 CAPLUS
(22) Stuart, B; Phys Rev Lett 1995, V74(12), P2248 CAPLUS
(23) Sun, H; J Phys Chem B 2000, V104(15), P3450 CAPLUS
(24) Veasey, D; Appl Phys Lett 1999, V74(6), P789 CAPLUS
(25) Veasey, D; J Non-Cryst Solids 2000, V263(264), P369

L5 ANSWER 17 OF 124 CAPLUS

AN 2002:100607 CAPLUS
DN 136:282911
ED Entered STN: 06 Feb 2002

TI X-ray irradiation on the soda-lime container ***glass***

AU Sheng, Jiawei; Kadono, Kohei; Utagawa, Yasushi; Yazawa, Tetsuo
CS Special Division for the Green Life Technology, National Institute of Advanced Industrial Science & Technology (AIST), AIST Kansai, Ecoglass Research Group, Osaka, Ikeda, 563-8577, Japan

SO Applied Radiation and Isotopes (2002), 56(4), 621-626
CODEN: ARISEF; ISSN: 0969-8043
PB Elsevier Science Ltd.
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73

AB X-ray irradn.-induced defects in com. soda-lime container ***glass*** were studied by means of optical spectrophotometer and ESR. The induced ***color*** might be applied to producing recyclable ***glasses*** . The nonbridging oxygen hole ***centers*** (NBOHCs) were mainly responsible for the irradn. induced absorptions at 431 and 627 nm of ***glass*** . The absorption at 305 nm was attributed to the trapped electron. The induced deep ***color*** can be kept for longer than 7 mo, but can be almost ***bleached*** at 300.degree.C for 20 min.

ST x ray irradn soda lime container ***glass*** defect ***color*** ; optical absorption soda lime container ***glass*** x ray irradn

IT Annealing
Color
Color ***centers***
IR spectra
Optical absorption
UV and visible spectra
(effects of x-ray irradn.-induced defects on optical absorption of soda-lime container ***glass***)

IT Soda-lime ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effects of x-ray irradn.-induced defects on optical absorption of soda-lime container ***glass***)

IT X-ray
(irradn.; effects of x-ray irradn.-induced defects on optical

absorption of soda-lime container ***glass***)
IT 7782-44-7, Oxygen, properties
RL: PRP (Properties)
(nonbridging; effects of x-ray irradn.-induced defects on optical absorption of soda-lime container ***glass***)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Bartoll, J; Phys Chem Glasses 2000, V41(3), P140 CAPLUS
(2) Bishay, A; J Non-Cryst Solids 1970, V3, P54
(3) Ebeling, P; Glastech Ber Glass Sci Technol 2000, V73(5), P156 CAPLUS
(4) Friebele, E; J Non-Cryst Solids 1985, V72, P221 CAPLUS
(5) Friebele, E; Radiation effects in Optical and properties of glass 1991, P205 CAPLUS
(6) Griscom, D; J Non-Cryst Solids 1984, V64, P229 CAPLUS
(7) Griscom, D; J Non-Cryst Solids 1998, V239, P66 CAPLUS
(8) Hosono, H; J Non-Cryst Solids 1990, V125, P98 CAPLUS
(9) Marshall, C; J Non-Cryst Solids 1997, V212, P59 CAPLUS
(10) Rajaram, M; J Non-Cryst Solids 1989, V108, P1 CAPLUS
(11) Schreurs, J; J Chem Phys 1967, V47(2), P818
(12) Tanimura, K; J Appl Phys 1985, V58(12), P4544 CAPLUS
(13) Yazawa, T; Osaka Natl Res Inst (ONRI) Newslett 2000, V44(11), P4

L5 ANSWER 18 OF 124 CAPLUS
AN 2001:642602 CAPLUS
DN 135:214634
ED Entered STN: 02 Sep 2001
TI Optical studies in gamma-irradiated commercial soda-lime silicate ***glasses***

AU Suszynska, M.; Macalik, B.
CS W. Trzebiatowski-Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, 50-950/2, Pol.

SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2001), 179(3), 383-388
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.

DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 71, 73

AB Optical absorption measurements of gamma-irradiated (60Co) com. soda-lime silicate (SLS) ***glasses*** were performed at room temp. (RT) to detect and characterize the induced radiation damage in these materials. Isothermal ***bleaching*** (RT-723 K) of the radiation-induced defects, followed the irradn. of samples. In ***glasses*** contg. different amt. of the ***glass*** -network modifiers (Na2O, K2O) and some multivalent transition metal cations (Fe2+/Fe3+, Ni2+ and/or Mn2+) three absorption bands have been distinguished in the wavelength region extending from 250 to 1800 nm. In contrast to the electron-type ***color*** ***centers*** , detected at low temps. for X-irradiated nominally pure sodium silicates, we propose that the absorption bands found for gamma-irradiated SLS ***glasses*** are induced by some hole-type ***color*** ***centers*** related with nonbridging oxygen ions (NBO-) located in different surroundings. The radiation-induced enhancement of diffusivity of ions together with bond breaking and defect creation in the ***glass*** -network could give materials with well-defined nonlinear optical properties.

ST gamma radiation damage soda lime ***glass*** ***color*** ***center*** ; ***bleaching*** diffusivity soda lime ***glass*** gamma irradn; nonlinear optical property soda lime ***glass*** gamma irradn
IT Gamma ray
(irradn.; optical studies in gamma-irradiated com. soda-lime silicate ***glasses***)
IT ***Color*** ***centers***
Diffusion
Nonlinear optical properties
Optical absorption
Photochemical ***bleaching***
UV and visible spectra
(optical studies in gamma-irradiated com. soda-lime silicate ***glasses***)
IT Soda-lime ***glasses***

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(optical studies in gamma-irradiated com. soda-lime silicate ***glasses***)

IT Defects in solids
(radiation-induced; optical studies in gamma-irradiated com. soda-lime silicate ***glasses***)

IT Radiation damage
(solid-state defects; optical studies in gamma-irradiated com. soda-lime silicate ***glasses***)

IT 7439-89-6, Iron, processes 7439-96-5, Manganese, processes 7440-02-0, Nickel, processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optical studies in gamma-irradiated com. soda-lime silicate ***glasses*** contg.)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Berg, K; Proceedings of the 12th International Conference on Defects in Insulating Materials Schloss Nordkirchen 1992-1993, P914
(2) Charles, R; J Am Ceram Soc 1962, V45, P105 CAPLUS
(3) Charles, R; J Am Ceram Soc 1963, V46, P235 CAPLUS
(4) Friebele, E; Apll Phys Lett 1976, V28, P516 CAPLUS
(5) Griscom, D; Am Ceram Soc Bull 1975, V54, P814
(6) Mackey, J; J Phys Chem Solids 1966, V27, P1759 CAPLUS
(7) Morawska-Kowal, T; Nucl Instr and Meth B 2000, V166-167, P490
(8) Owen, A; Progress in Ceramic Sciences 1963, V3 CAPLUS
(9) Porai-Koshits, E; J Non-Cryst Solids 1965, V1, P29
(10) Suszynska, M; Radiat Eff Def Solids in press
(11) Vogel, W; Glass Chemistry 1994, P44
(12) Yoshimura, E; Nucl Instr and Meth B 1998, V141, P304 CAPLUS

L5 ANSWER 19 OF 124 CAPLUS

AN 2001:600991 CAPLUS

DN 135:199094

ED Entered STN: 20 Aug 2001

TI Time and dose dependent effects of high-energy radiation on ***glasses***

AU Nofz, M.; Stosser, R.; Scholz, G.; Bartoll, J.; Janata, E.; Reich, Ch.

CS Federal Institution for Materials Research and Testing, Rudower Chaussee, D-12489, Germany

SO Proceedings of International Congress on Glass, 18th, San Francisco, CA, United States, July 5-10, 1998 (1998), 1169-1174. Editor(s): Choudhary, Manoj K. Publisher: American Ceramic Society, Westerville, Ohio.
CODEN: 69BQGS

DT Conference; (computer optical disk)

LA English

CC 57-1 (Ceramics)
Section cross-reference(s): 71, 73, 77

AB Using nominally undoped CaO-(CAS) and ZnO-Al2O3-SiO2 (ZAS) ***glasses*** and performing optical and ESR expts. at identical specimens, exposed to .gamma.-rays or fast electrons, the following results were obtained: (i) part of the Fe ions present in the samples was reduced, (ii) in the CAS ***glasses*** short-lived defects (.mu.s) absorb at 400-600 nm, however, a strong absorption band at 300 nm is resistant against thermal (up to 780 K) and optical (white light of an 800 W -Hg-lamp) ***bleaching*** , (iii) except the band centered at 300 nm the induced absorption of the ZAS ***glasses*** appears at shorter wavelengths than that of the CAS ones, (iv) no simple dose dependence was obsd. for ZAS ***glasses*** , which are able to form "Zn+" ***centers*** , (v) ESR and UV/VIS spectroscopies yield complementary information on radiation induced changes of structure and properties of ***glassy*** materials.

ST electron radiation defect calcium aluminosilicate ***glass*** ***color*** ***center*** ; gamma irradn zinc aluminosilicate ***glass*** optical absorption photochem ***bleaching*** ; magnetic induction calcium aluminosilicate ***glass*** gamma irradn UV spectra; ESR spectra zinc aluminosilicate ***glass*** electron irradn paramagnetic ***center***

IT Aluminosilicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(calcium aluminosilicate; time and dose dependent effects of

high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
IT Electron beams
Gamma ray
(irradn.; time and dose dependent effects of high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
IT Defects in solids
(radiation-induced; time and dose dependent effects of high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
IT Radiation damage
(solid-state defects; time and dose dependent effects of high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
IT ***Color*** ***centers***
ESR (electron spin resonance)
Magnetic induction
Optical absorption
Paramagnetic ***centers***
Photochemical ***bleaching***
UV and visible spectra
(time and dose dependent effects of high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
IT Aluminosilicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(zinc aluminosilicate; time and dose dependent effects of high-energy electron and gamma ray radiation on aluminosilicate ***glasses***)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Janata, E; Radiat Phys Chem 1996, V47, P29 CAPLUS
(2) Nofz, M; Phys Chem Glasses 1990, V31, P57 CAPLUS
(3) Stosser, R; Glastech Ber Glass Sci Technol 1995, V68 C1, P188
(4) Wong, J; Glass Structure by Spectroscopy 1976

L5 ANSWER 20 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:439405 CAPLUS
DN 135:279605
ED Entered STN: 18 Jun 2001
TI Stability of radiation coloration of optical ***glasses***
AU Arbuzov, V. I.; Suchkov, F. V.
CS S. I. Vavilov State Optical Institute, St. Petersburg, Russia
SO Journal of Optical Technology (Translation of Opticheskii Zhurnal) (2001), 68(6), 447-456
CODEN: JOTEE4; ISSN: 1070-9762
PB Optical Society of America
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74
AB Model phosphate and silicate ***glasses*** of simple compns. were studied, along with optical ***glasses*** of the crown and flint groups and their radiation-stable counterparts contg. Ce oxide. The ***glasses*** were irradiated with x-rays or .gamma. quanta, varying the irradn. time in wide limits. The main method of study was chronospectroscopy of the radiation ***color*** ***centers*** , which essentially consists of measuring the induced absorption spectra at different stages of postradiation isothermal relaxation of the radiation coloration and analyzing the changes of their shape and intensity. Representing the relaxation kinetics of the radiation-induced absorption in optical-d.-log-time coordinates makes it possible to describe the temporal character of the postradiation ***bleaching*** of the irradiated ***glasses*** with only one relaxation-rate parameter. The nature of the ***color*** ***centers*** , the irradn. dose (or duration), and also the presence of variable-valence elements (Ce, Fe) in the ***glass*** affects the relaxation rate of the radiation coloration in the ***glasses*** studied here.
ST radiation coloration optical ***glass*** stability
IT X-ray
(coloration of optical ***glasses*** stability)
IT Gamma ray
(irradn.; coloration of optical ***glasses*** stability)
IT Phosphate ***glasses***

Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(optical; stability of radiation coloration of)
IT Coloring
(radiation; of optical ***glasses*** stability)
IT 1305-78-8, Calcium oxide, processes 1306-38-3, Cerium dioxide, processes 7439-89-6, Iron, processes 13477-39-9, Calcium phosphate (Ca(PO3)2)
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(stability of radiation coloration of optical ***glasses*** contg.)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Arbuzov, V; Fiz Khim Stekla 1988, V14, P558 CAPLUS
(2) Arbuzov, V; Fiz Khim Stekla 1989, V15, P103 CAPLUS
(3) Arbuzov, V; Fiz Khim Stekla 1991, V17, P583 CAPLUS
(4) Arbuzov, V; Fiz Khim Stekla 1991, V17, P80 CAPLUS
(5) Arbuzov, V; Fiz Khim Stekla 1993, V19, P410 CAPLUS
(6) Arbuzov, V; Fiz Khim Stekla 1996, V22, P228
(7) Arbuzov, V; Glastechn Ber-Glass Sci Techn 1998, V71C, P55
(8) Arbuzov, V; Izv Akad Nauk SSSR Ser Fiz 1986, V50(3), P126
(9) Arbuzov, V; J Non-Cryst Solids 1999, V253, P37 CAPLUS
(10) Bishay, A; J Non-Cryst Solids 1970, V3, P54
(11) Dobreva, A; J Non-Cryst Solids 1997, V209, P257 CAPLUS
(12) Glebov, L; Fiz Khim Stekla 1985, V11, P79 CAPLUS
(13) Glebov, L; Fiz Khim Stekla 1990, V16, P39 CAPLUS
(14) Mackey, I; J Phys Chem Solids 1966, V27, P1759
(15) Soga, N; J Ceram Assoc Japan 1962, V70(5), P143
(16) Stroud, J; J Chem Phys 1962, V37, P836 CAPLUS
(17) Stroud, J; J Chem Phys 1965, V43, P2442 CAPLUS
(18) Tashiro, M; J Ceram Assoc Japan 1960, V68(7), P169
(19) Volchek, A; Glass Physics and Chemistry 1996, V22, P301 CAPLUS
(20) Yonezawa, F; J Non-Cryst Solids 1996, V198-200, P503 CAPLUS
(21) Yudin, D; Fiz Tverd Tela (Leningrad) 1965, V7, P1733 CAPLUS
(22) Yudin, D; Sov Phys Solid State 1965, V7, P1399

L5 ANSWER 21 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:424880 CAPLUS
DN 135:172326
ED Entered STN: 13 Jun 2001
TI Studies of the properties of copper-cadmium photochromic ***glasses***
AU Rysiakiewicz-Pasek, Ewa; Marczuk, Krystyna
CS Institute of Physics, Wroclaw University of Technology, Wroclaw, 50-370, Pol.
SO Optica Applicata (2000), 30(4), 671-676
CODEN: OPAPBZ; ISSN: 0078-5466
PB Oficyna Wydawnicza Politechniki Wroclawskiej
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57
AB The properties of photochromic ***glasses*** contg. Cu and Cd chloride were studied. The influence of the temp. and time of heat treatment on the change of the ***glass*** structure was considered. The parameters (coeffs.) detg. the ***bleaching*** process were calcd. To study the structure of photochromic ***glasses*** after heating the thermally stimulated depolarization technique was applied. The origin of TSDC peaks is discussed.
ST photochromic property copper cadmium doped ***glass***
IT Heat treatment
(effect of; properties of copper-cadmium photochromic ***glasses***
)
IT Absorptivity
Color ***centers***
Photochromism
(properties of copper-cadmium photochromic ***glasses***)
IT Aluminoborosilicate ***glasses***
Photochromic ***glass***
RL: PRP (Properties)
(properties of copper-cadmium photochromic ***glasses***)
IT 7440-43-9D, Cadmium, halides, properties 7440-50-8D, Copper, halides,

properties
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(properties of copper-cadmium photochromic ***glasses***)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Araujo, R; J Appl Phys 1976, V47, P1370 CAPLUS
(2) Borelli, N; J Appl Phys 1979, V50, P5978
(3) Caurant, D; J Appl Phys 1982, V71, P1981
(4) Chunseng, N; J Non-Cryst Solids 1986, V80, P487
(5) Jannek, H; J Am Ceram Soc 1981, V64, P227 CAPLUS
(6) Kawazoe, K; J Non-Cryst Solids 1989, V111, P16
(7) Marquard, C; J Appl Phys 1977, V48, P3669
(8) Milberg, M; Phys Chem Glasses 1972, V13, P79 CAPLUS
(9) Tick, P; J Non-Cryst Solids 1979, V33, P383 CAPLUS
(10) Trotter, D; J Appl Phys 1982, V53, P4657 CAPLUS
(11) Yun, Y; J Non-Cryst Solids 1978, V27, P363 CAPLUS

L5 ANSWER 22 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:555288 CAPLUS
DN 134:116745
ED Entered STN: 13 Aug 2000
TI Product/package interaction: Effect of physical, chemical, and climatic environments
AU Newsham, M. D.; Giacin, J. R.; Singh, S. P.
CS Ocean Spray Cranberries, Inc, Middleboro, MA, 02346, USA
SO Journal of Testing and Evaluation (2000), 28(2), 103-108
CODEN: JTEVAB; ISSN: 0090-3973
PB ASTM
DT Journal
LA English
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 46
AB Product/package interactions were evaluated for three product/package systems: a ***bleach*** alternative laundry additive, an anti-bacterial surface cleaner, and a ***glass*** surface cleaner. The package system was comprised of high-d. polyethylene bottles with induction-sealed closures. The phys. environment was studied by comparing product/package systems that were exposed to simulated distribution testing with those that were not. The storage environments were ambient conditions at 73.degree.F (23.degree.C), and higher temps. at 100, 120, and 140.degree.F (38, 49, and 60.degree.C). Damage caused by distribution testing occurred in the bottle or in the closure component of the package. Bottle defects resulting from distribution testing were dents, abrasions, and creases. Closure defects included sheared-off closures, cracks in the closure body, or nozzle cover damage. Product/package systems exposed to the four storage environments were inspected for failure, defined as product leaking from the package, during the six-month study. Failures were due to environmental stress cracking. Dents in the shoulder and bottom region of the bottle were the only simulated distribution defects that impacted the storage stability of the product/package systems, which often resulted in reduced shelf life. The primary location of all other failures was near the ***center*** of the bottle bottom edge, which was the thinnest region of the bottle. ***Bleach*** alternative laundry additive was the most aggressive product, while the two surface cleaners exhibited similar storage stability. Performance criteria of the failed bottles were evaluated to study the impact of package system properties on product/package integrity. Yield strength, modulus of elasticity, and dynamic mech. properties of failed sample-acquired bottle side panels did not change significantly from those of the control samples. ***Color*** changes were monitored by measuring interior and exterior surface yellowness indexes of bottle side panels. Although obsd. spectrophotometrically, these changes were not detected visually.
ST polyethylene HDPE packaging bottle household cleaner interaction
IT ***Bleaching*** agents
Detergents
Packaging materials
Scouring agents
(effect of phys., chem., and climatic environments on interaction between polyethylene bottles and household cleaning products)
IT Bottles
(plastic; effect of phys., chem., and climatic environments on interaction between polyethylene bottles and household cleaning

products)
IT 9002-88-4, Polyethylene
RL: DEV (Device component use); USES (Uses)
(high-d.; effect of phys., chem., and climatic environments on interaction between polyethylene bottles and household cleaning products)
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anon; International Safe Transit Association Project 1997, 1A
(2) Newsham, M; thesis Michigan State University 1998

L5 ANSWER 23 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:479648 CAPLUS
DN 133:211726
ED Entered STN: 16 Jul 2000
TI Enhanced photoinduced .chi.(2) in gamma-ray-irradiated bulk ***glass***
AU Isbi, Yuval; Sternklar, Shmuel; Granot, Er'el; Boehm, Lea
CS Non Linear Optics Group, Electrooptics Division, Soreq Nuclear Research Center, Yavne, 81800, Israel
SO Optics Letters (2000), 25(12), 902-904
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 71
AB Gamma-ray-irradiated light-flint silicate bulk ***glass*** (Schott ***Glass*** LF5), which contains a large amt. of lead oxide, displays enhanced photoinduced quasi-phase-matched second-harmonic generation (PSHG), whereas nonirradiated ***glass*** under the same exptl. conditions does not generate this nonlinear effect. The dependence of the efficiency of PSHG on the amt. of gamma radiation (up to 530 krad) is exptl. studied, as is the role of thermal recovery (***bleaching***) of the ***color*** ***centers*** as a result of seeding with the second harmonic. The effect of long-term fading is studied with a sample that was irradiated 8 yr ago. Gamma irradn. of boron-crown silicate ***glass*** (BK7) does not show this enhancement.
ST silicate ***glass*** gamma ray irradn induced second harmonic generation; lead silicate ***glass*** irradn induced second harmonic generation
IT Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(BK7; enhanced photoinduced quasiphase-matched second-harmonic generation in gamma ray-irradiated bulk ***glass***)
IT Lead ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(LF5; enhanced photoinduced quasiphase-matched second-harmonic generation in gamma ray-irradiated bulk ***glass***)
IT Photochemical ***bleaching***
(enhanced photoinduced quasiphase-matched second-harmonic generation in gamma ray-irradiated bulk ***glass***)
IT Second-harmonic generation
(photoinduced; enhanced photoinduced quasiphase-matched second-harmonic generation in gamma ray-irradiated bulk ***glass***)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anderson, D; Opt Lett 1991, V16, P796 CAPLUS
(2) Anoikin, E; Opt Lett 1990, V15, P834 CAPLUS
(3) Bloembergen, N; Nonlinear Optics 1965
(4) Dianov, E; Soc Lightwave Commun 1991, V1, P247
(5) Driscoll, T; J Opt Soc Am B 1994, V11, P355 CAPLUS
(6) Driscoll, T; Opt Lett 1992, V17, P571 CAPLUS
(7) Hanfusa, H; J Appl Phys 1985, V58, P1356
(8) Kamal, A; OSA Annual Meeting, Vol 15 of OSA Technical Digest Series 1990, TuGG2
(9) Lawandy, N; Phys Rev Lett 1990, V65, P1745 CAPLUS
(10) Liepmann, M; Proc SPIE 1992, V1761, P284
(11) Nageno, Y; Opt Lett 1995, V20, P2180 CAPLUS
(12) Osterberg, U; Opt Lett 1986, V11, P516
(13) Stolen, R; Opt Lett 1987, V12, P585 CAPLUS

(14) Wong, J; Glass Structure by Spectroscopy 1976, P346
(15) Zel'dovich, B; JETP Lett 1989, V50, P439

L5 ANSWER 24 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:325747 CAPLUS
DN 133:50347
ED Entered STN: 19 May 2000
TI The nature of the 4.8 eV optical absorption band induced by vacuum-ultraviolet irradiation of ***glassy*** SiO2
AU Skuja, L.; Mizuguchi, M.; Hosono, H.; Kawazoe, H.
CS Institute of Solid State Physics, University of Latvia, Riga, Latvia
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2000), 166-167, 711-715
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The controversial optical absorption band centered at 4.8 eV, which is present in nearly all irradiated silicas, was studied. It is caused by .gtoreq.2 different defects: nonbridging O hole ***center*** (NBOHC) and interstitial ozone (O3). Both species have absorption bands at 4.8 eV, the O3-related band is identified by its susceptibility to ***bleaching*** by 4 to 5 eV photons, by a smaller halfwidth and by its independence from the NBOHC-assocd. 1.9 eV photoluminescence (PL) band. The contribution of NBOHC to the 4.8 eV band is dominant in most cases, while O3 is important in F2 excimer laser-irradiated samples of O-rich ***glassy*** SiO2.
ST silica ***glass*** UV spectra luminescence irradn; neutron irradn silica ***glass*** UV spectra luminescence; ***color*** ***center*** silica ***glass*** UV spectra luminescence; ***bleaching*** silica ***glass*** UV spectra luminescence; spectral hole burning silica ***glass*** UV spectra luminescence; ozone interstitial silica ***glass*** UV spectra luminescence; defect silica ***glass*** UV spectra luminescence
IT ***Color*** ***centers***
(V; nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT Defects in solids
Luminescence
Spectral hole burning
UV and visible spectra
UV radiation
(nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT Interstitials
(ozone; nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT 10028-15-6, Ozone, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(interstitial; nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT 12586-31-1, Neutron
RL: NUU (Other use, unclassified); USES (Uses)
(irradn.; nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT 17778-80-2, Atomic oxygen, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
IT 60676-86-0, Vitreous silica
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(nature of 4.8 eV optical absorption band induced by vacuum-UV irradn. of ***glassy*** silica)
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Alder, M; J Am Chem Soc 1950, V72, P1884 CAPLUS
(2) Awazu, K; J Appl Phys 1990, V68, P3587

(3) Baulch, D; J Phys Chem Ref Data 1980, V9, P295 CAPLUS
(4) Compton, W; Discuss Faraday Soc 1961, V31, P130
(5) Devine, R; Defects In Glasses, Mater Res Soc Symposia Proc 1986, V61, P177 CAPLUS
(6) Griscom, D; J Ceram Soc 1991, V99, P923 CAPLUS
(7) Hajnal, Z; Solid State Commun 1998, V108, P93 CAPLUS
(8) Hosono, H; Appl Phys Lett 1999, V74, P2755 CAPLUS
(9) Hosono, H; J Non-Cryst Solids 1990, V116, P289 CAPLUS
(10) Hosono, H; Phys Rev Lett 1998, V80, P317 CAPLUS
(11) Lange, S; Appl Optics 1973, V12, P1733
(12) Okabe, H; Photochemistry of Small Molecules 1978
(13) Sigel, G; J Non-Cryst Solids 1973-1974, V13, P372
(14) Silin, A; Fiz Khim Stekla 1978, V4, P405
(15) Skuja, L; J Appl Phys 1996, V80, P3518 CAPLUS
(16) Skuja, L; J Appl Phys 1998, V83, P6106 CAPLUS
(17) Skuja, L; J Non-Cryst Solids 1984, V63, P431 CAPLUS
(18) Skuja, L; J Non-Cryst Solids 1994, V179(51)
(19) Skuja, L; J Non-Cryst Solids 1998, V239, P16 CAPLUS
(20) Skuja, L; Phys Rev B 1998, V58, P14296 CAPLUS
(21) Stathis, J; Philos Mag B 1984, V49, P357 CAPLUS

L5 ANSWER 25 OF 124 CAPLUS
AN 2000:325741 CAPLUS
DN 133:123897
ED Entered STN: 19 May 2000
TI Interaction of F2 excimer laser with SiO2 ***glasses*** : Towards the third generation of synthetic SiO2 ***glasses***
AU Hosono, H.; Ikuta, Y.
CS Materials and Structures Laboratory, Tokyo Institute of Technology, Midori-ku, Nagatsuta, Yokohama, Japan
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2000), 166-167, 691-697
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB Changes in optical absorption spectra and defect formation of different types of synthetic SiO2 ***glasses*** were examd. by irradn. with F2 excimer laser pulses (157 nm). Fluorine-doped, OH-free SiO2 ***glasses*** exhibit high optical transmittance (.apprx.80%) at 157 nm in an as-delivered state and the intensity of F2-laser-induced absorption is much less than that in wet or dry F-free samples. The effect of F-doping on the blue shift of the absorption edge and suppression of ***color*** ***center*** formation was conspicuous up to 1 mol% but was slight upon further doping. It is suggested that elimination of strained Si-O-Si bonds upon F-doping is the primary reason of the improvement of resistance of SiO2 ***glasses*** to F2-laser light. Novel optical phenomena by F2-laser irradn., ***bleaching*** of the vacuum UV (VUV) absorption edge and changes in the SiOH IR absorption, were found in H2-impregnated, or wet SiO2 ***glasses*** . These results lead to the conclusion that F-doping to 1 mol% is an effective and practical method to obtain synthetic SiO2 ***glasses*** for F2 excimer laser optics as a photomask in optical lithog.
ST vitreous silica laser interaction fluoride doping
IT IR absorption
Optical transmission
Photochemical ***bleaching***
Photolithography
(effects of F doping on interaction of F2 excimer laser with vitreous silica in relation to use as a photomask in optical lithog.)
IT 16984-48-8, Fluoride, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant, vitreous silica; effects of F doping on interaction of F2 excimer laser with vitreous silica in relation to use as a photomask in optical lithog.)
IT 71132-80-4, Silicon hydroxide (Si(OH))
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(effects of F doping on interaction of F2 excimer laser with vitreous silica in relation to use as a photomask in optical lithog.)
IT 60676-86-0, Vitreous Silica

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(effects of F doping on interaction of F2 excimer laser with vitreous silica in relation to use as a photomask in optical lithog.)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Arai, K; Appl Phys Lett 1988, V53, P1891 CAPLUS
(2) Devine, R; Phys Rev B 1987, V35, P2560 CAPLUS
(3) Duncan, T; J Appl Phys 1986, V60, P130 CAPLUS
(4) Duncan, T; J Appl Phys 1986, V60, P130 CAPLUS
(5) Galeener, F; The Structure of Non-Crystalline Materials 1982, P337
(6) Griscom, D; J Ceram Soc Jpn 1991, V99, P923 CAPLUS
(7) Hosono, H; Phys Rev B 1991, V44, P12043 CAPLUS
(8) Kaminow, I; Appl Phys Lett 1978, V32, P98 CAPLUS
(9) Kitamura, N; Phys Rev B 1994, V50, P132 CAPLUS
(10) Mizuguchi, M; J Opt Soc Am B 1999, V16, P1153 CAPLUS
(11) Mizuguchi, M; J Vac Sci Tech A 1998, V16, P3052 CAPLUS
(12) Mizuguchi, M; Opt Lett 1999, V24, P863 CAPLUS
(13) Morimoto, Y; Phys Rev B 1999, V59, P4066 CAPLUS
(14) Rothschild, M; Appl Phys Lett 1989, V55, P1276 CAPLUS
(15) Skuja, L; J Non-Cryst Solids 1998, V239, P16 CAPLUS

L5 ANSWER 26 OF 124 CAPLUS

AN 2000:325295 CAPLUS

DN 133:47361

ED Entered STN: 19 May 2000

TI Interaction of radiation-induced defects of ***glasses*** with CdSe and CdS nanocrystals

AU Kraevskii, S. L.; Solinov, V. F.

CS Research Institute of Technical Glass, Moscow, 117218, Russia

SO Glass Physics and Chemistry (Translation of Fizika i Khimiya Stekla) (2000), 26(2), 137-142
CODEN: GPHCEE; ISSN: 1087-6596

PB MAIK Nauka/Interperiodica Publishing

DT Journal

LA English

CC 57-1 (Ceramics)
Section cross-reference(s): 73

AB The influence of X-ray irradn. on the absorption spectra of com. light filters based on the ***glasses*** contg. selenium, cadmium, and sulfur has been investigated. The light filters were preliminary subjected to the heat treatment, which resulted in the pptn. of nanocrystals in the ***glass*** matrix. The irradn. leads to stationary partial ***bleaching*** of ***glasses*** . Anal. demonstrates that the difference spectra contain the induced absorption bands of conventional radiation-induced ***color*** ***centers*** of alkali silicate ***glasses*** and a fine structure. The fine structure closely resembles the known difference spectra obtained under the action of the external const. or low-frequency alternating elec. field on ***glasses*** contg. CdSe nanocrystals. The conclusion is drawn that the stable radiation-induced ***centers*** of the ***glass*** at the interface with nanocrystals serve as a source of the Coulomb field affecting the energy levels of the size quantization of the nanocrystals. It is suggested that nanocrystals of the type of the CdSxSe1-x solid solns. in these ***glasses*** are either lacking or do not manifest themselves in the spectra after irradn.

ST ***glass*** optical filter irradn defect interaction; cadmium sulfide ppt ***glass*** optical filter irradn defect interaction; cadmium selenide ppt ***glass*** optical filter irradn defect interaction

IT Nanocrystals
(CdSe and CdS; interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)

IT Optical ***glass***
RL: DEV (Device component use); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process); USES (Uses)
(filters; interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)

IT Optical filters
(***glass*** ; interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)

IT Absorption spectra

Photochemical ***bleaching***
(interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)
IT ***Color*** ***centers***
(radiation-induced; interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)
IT 1306-23-6, Cadmium sulfide (CdS), processes 1306-24-7, Cadmium selenide (CdSe), processes 12626-36-7, Cadmium selenide sulfide
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); FORM (Formation, nonpreparative); PROC (Process)
(nanocrystals; interaction of radiation-induced defects of ***glass*** optical filters with CdSe and CdS nanocrystals)
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Cotter, D; Electron Lett 1990, V26(3), P183
(2) Cotter, D; Semicond Sci Technol 1990, V5(6), P631 CAPLUS
(3) Dneprovskii, V; Zh Eksp Teor Fiz 1998, V114(2(8)), P700
(4) Efros, A; Fiz Tekh Poluprovodn (Leningrad) 1982, V16(7), P1209 CAPLUS
(5) Ekimov, A; Fiz Khim Stekla 1980, V6(4), P511 CAPLUS
(6) Ekimov, A; Fiz Tekh Poluprovodn (Leningrad) 1982, V16(7), P1215 CAPLUS
(7) Esch, V; Phys Rev B: Condens Matter 1990, V42(12), P7450 CAPLUS
(8) Gaponenko, S; Zh Prikl Spektrosk 1982, V37(5), P863 CAPLUS
(9) Hache, F; Appl Phys Lett 1989, V55(15), P1504 CAPLUS
(10) Kang, K; Appl Phys Lett 1994, V64(12), P1487 CAPLUS
(11) Kraevskii, S; Fiz Khim Stekla 1998, V24(6), P711
(12) Kraevskii, S; Fiz Khim Stekla 1999, V25(2), P199
(13) Kraevskii, S; Glass Phys Chem (Engl transl) 1998, V24(6), P501 CAPLUS
(14) Kraevskii, S; Glass Phys Chem (Engl transl) 1999, V25(2), P151 CAPLUS
(15) Kutolin, S; Fizicheskaya khimiya tsvetnogo stekla 1988
(16) Kutolin, S; Physical Chemistry of a Colored Glass 1988
(17) Lifshitz, I; Zh Eksp Teor Fiz 1958, V35(2(8)), P479
(18) Masumoto, Y; Phys Rev B: Condens Matter 1995, V52(7), P4688 CAPLUS
(19) Naoe, K; Phys Rev B: Condens Matter 1994, V50(24), P18200 CAPLUS
(20) Norris, D; Phys Rev Lett 1994, V72(16), P2612 CAPLUS
(21) Polyakov, V; Fiz Tech Poluprovodn (Leningrad) 1982, V16(7), P1200 CAPLUS

L5 ANSWER 27 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:258811 CAPLUS
DN 132:350479
ED Entered STN: 21 Apr 2000
TI ***Bleaching*** of ESR signals by the sunlight: a laboratory experiment for establishing the ESR dating of sediments
AU Toyoda, S.; Voinchet, P.; Falgueres, C.; Dolo, J. M.; Laurent, M.
CS Faculty of Science, Department of Applied Physics, Okayama University of Science, Okayama, Japan
SO Applied Radiation and Isotopes (2000), 52(5), 1357-1362
CODEN: ARISEF; ISSN: 0969-8043
PB Elsevier Science Ltd.
DT Journal
LA English
CC 53-8 (Mineralogical and Geological Chemistry)
AB A lab. ***bleaching*** expt. was performed in order to improve the method of ESR dating of sediments. Quartz samples from several sedimentary, volcanic, and granitic rocks showed consistent ***bleaching*** response on exposure to halogen lamps. It was found that the most sensitive signals are the Ti-H and Ti-Na ***centers*** . There was no difference obsd. within the samples exposed to light filtered by several ***color*** ***glass*** plates, according to the present preliminary result.
ST ESR signal ***color*** ***center*** quartz sediment age detn
IT Geological sediments
(age detn. of; ***bleaching*** of ESR signals by the sunlight and a lab. expt. for establishing the ESR-based age detn. of sediments)
IT Geological dating
(***bleaching*** of ESR signals by the sunlight and a lab. expt. for establishing the ESR-based age detn. of sediments)
IT Granite, occurrence
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(***bleaching*** of ESR signals by the sunlight and a lab. expt. for establishing the ESR-based age detn. of sediments)

IT ***Bleaching***
(of ***color*** ***centers*** in quartz; ***bleaching*** of ESR signals by the sunlight and a lab. expt. for establishing the ESR-based age detn. of sediments)
IT 14808-60-7, Quartz, occurrence
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(***bleaching*** of ESR signals by the sunlight and a lab. expt. for establishing the ESR-based age detn. of sediments)
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Falgueres, C; Nucl Tracks Radiat Meas 1991, V18, P155 CAPLUS
(2) Falgueres, C; Quaternary Geochronol 1993, V13, P619
(3) Fukuchi, T; Japan Earth Planet Sci Lett 1986, V78, P121 CAPLUS
(4) Huntley, D; Nature 1985, V313, P105
(5) Ikeya, M; Science 1982, V215, P1392
(6) Imai, N; Nature 1985, V314, P81 CAPLUS
(7) Jani, M; Phys Rev B 1983, V27, P2285 CAPLUS
(8) Jin, S; Appl Radiat Isot 1993, V44, P175 CAPLUS
(9) Laurent, M; CR Acad Sci Paris 1994, V318(2), P521
(10) Laurent, M; Quatern Geochoronol 1998, V17, P1057
(11) Laurent, M; dissertation unpublished 1993, P103
(12) Lee, H; Tectonophys 1994, V235, P317 CAPLUS
(13) Okada, M; Chem Phys Letters 1971, V11, P275 CAPLUS
(14) Porat, N; Israel Geoarchaeology 1994, V9, P393
(15) Porat, N; Nucl Tracks Radiat Meas 1991, V18, P203 CAPLUS
(16) Rink, W; Radiat Meas 1997, V27, P975 CAPLUS
(17) Rinneberg, H; J Chem Phys 1972, V56, P2019 CAPLUS
(18) Tanaka, K; Australia Quatern Geochronol 1995, V14, P385
(19) Tanaka, K; ESR Dating and Dosimetry 1985, P275
(20) Toyoda, S; Appl Radia Isot 2000, V52, P1351 CAPLUS
(21) Toyoda, S; Geochem J 1991, V25, P437 CAPLUS
(22) Toyoda, S; J Volcanol Geotherm Res 1995, V67, P29 CAPLUS
(23) Toyoda, S; dissertation Osaka University 1992
(24) Yokoyama, Y; ESR Dating and Dosimetry 1985, P197
(25) Yokoyama, Y; Nucl Tracks Radiat Meas 1985, V10, P921 CAPLUS

L5 ANSWER 28 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:140864 CAPLUS
DN 132:282818
ED Entered STN: 02 Mar 2000
TI Kinetics of ***decolorization*** of photochromic ***glass*** containing copper and cadmium halides
AU Marczuk, K.; Ziemba, B.
CS Inst. Fiz., Politechnika Wroclawska, Wroclaw, 50-370, Pol.
SO Prace Komisji Nauk Ceramicznych, Ceramika (Polska Akademia Nauk) (1997), 54(Postepy Technologii Ceramiki, Szkla i Budowlanych Materialow Wiazacych), 155-160
CODEN: PKNCE6; ISSN: 0860-3340
PB Polskie Towarzystwo Ceramiczne
DT Journal
LA Polish
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB The curves of the isothermal ***glass*** ***bleaching*** kinetics of various conditions of exciting radiation are presented. Different values of radiation power, time of irradn. and temp. of samples were applied. Anal. of the relaxation curves made it possible to distinguish three exponential components of the ***bleaching*** process with different time consts. For each component the relaxation coeff. has been detd. Based on temp. dependence of the relaxation coeffs. for the isothermal ***glass*** ***bleaching*** , the activation energy for slow (ED = 0,46eV) and fast (EK= 0.13eV) ***color*** ***center*** decay processes have been detd.
ST ***decolorization*** kinetics photochromic ***glass*** copper cadmium halide
IT Activation energy
(***color*** ***center*** decay; kinetics of ***decolorization*** of photochromic ***glass*** contg. copper and cadmium halides)
IT ***Color*** ***centers***
(decay; kinetics of ***decolorization*** of photochromic

glass contg. copper and cadmium halides)
IT Photochemical ***bleaching***
(kinetics of ***decolorization*** of photochromic ***glass***
contg. copper and cadmium halides)
IT Photochromic ***glass***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM
(Technical or engineered material use); PROC (Process); USES (Uses)
(sodium aluminoborosilicate; kinetics of ***decolorization*** of
photochromic ***glass*** contg. copper and cadmium halides)
IT 7758-89-6, Copper chloride 10108-64-2, Cadmium chloride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(photochromic ***glass*** component; kinetics of
decolorization of photochromic ***glass*** contg. copper
and cadmium halides)

L5 ANSWER 29 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:132815 CAPLUS
DN 132:187307
ED Entered STN: 25 Feb 2000
TI Stability aspects in the operation of a 2500-ppm thulium-doped ZBLAN fiber
laser at 481 nm
AU Laperle, P.; Vallee, R.; Chandonnet, A.
CS Departement de Physique, Universite Laval, Ste-Foy, QC, Can.
SO Optics Communications (2000), 175(1,2,3), 221-226
CODEN: OPCOB8; ISSN: 0030-4018
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
AB The authors report on the stable operation of a 2500-ppm Tm-doped ZBLAN
upconversion fiber laser at 481 nm and the related problem of photodegrdn.
assocd. with the formation of ***color*** ***centers*** . The
output coupling is obsd. to affect the level of induced absorption in the
fiber, hence the output power level. The start-up laser threshold
increases significantly over time after lasing as a result of a thermally
driven relaxation of photobleached ***color*** ***centers*** .
Three techniques were studied for restoring the transparency of the
darkened fiber prior to lasing operation: visible photobleaching at
514-nm, near-IR photobleaching from the 780-nm laser transition of Tm, and
annealing at temps. >100.degree..
ST stability aspect operation thulium ZBLAN fiber laser
IT Annealing
Photochemical ***bleaching***
(effect of; stability aspects in operation of a 2500-ppm thulium-doped
ZBLAN fiber laser at 481 nm)
IT Lasers
(fiber; stability aspects in operation of a 2500-ppm thulium-doped
ZBLAN fiber laser at 481 nm)
IT ***Color*** ***centers***
Photoinduced optical absorption
(stability aspects in operation of a 2500-ppm thulium-doped ZBLAN fiber
laser at 481 nm)
IT ZBLAN ***glasses***
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(stability aspects in operation of a 2500-ppm thulium-doped ZBLAN fiber
laser at 481 nm)
IT 7440-30-4, Thulium, properties 22541-23-7, Thulium(3+), properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP
(Properties); USES (Uses)
(stability aspects in operation of a 2500-ppm thulium-doped ZBLAN fiber
laser at 481 nm)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Barber, P; Opt Lett 1995, V20, P2195 CAPLUS
(2) Booth, I; IEEE J Quantum Electron 1996, V32, P118 CAPLUS
(3) Booth, I; Opt Lett 1996, V21, P348 CAPLUS
(4) Feller, G; Conference on Lasers and Electro-Optics 1996, V9(paper CFJ2)
(5) Laperle, P; J Non-Cryst Solids 1998, V239, P116 CAPLUS
(6) Laperle, P; Opt Lett 1995, V20, P2484 CAPLUS
(7) Laperle, P; Opt Lett 1997, V22, P178 CAPLUS
(8) Paschotta, R; IEEE J Sel Top Quantum Electron 1997, V3, P1100 CAPLUS

(9) Paschotta, R; J Opt Soc Am B 1997, V14, P1213 CAPLUS
(10) Sanders, S; Appl Phys Lett 1995, V67, P1815 CAPLUS
(11) Zellmer, H; Electron Lett 1997, V33, P1383 CAPLUS

L5 ANSWER 30 OF 124 CAPLUS
AN 2000:66091 CAPLUS
DN 132:114284
ED Entered STN: 28 Jan 2000
TI Engineering evaluation of effect of space corpuscular radiation on optical ***glass*** absorption
AU Akishin, A. I.; Tseplyaev, L. I.
CS NII Yadernoi Fiz. im. D. V. Skobel'tsyna, MGU, Moscow, Russia
SO Fizika i Khimiya Obrabotki Materialov (1999), (4), 21-24
CODEN: FKOMAT; ISSN: 0015-3214
PB Interkontakt Nauka
DT Journal
LA Russian
CC 71-9 (Nuclear Technology)
Section cross-reference(s): 57
AB The results of an investigation of radiation coloration and ***bleaching*** of radiation-induced darkening in optical ***glasses*** is presented. Dependencies of radiation-induced absorption on dose and dose rate are obtained as well as the data on the absorption relaxation after irradn. On the base of knowledge of deactivation energy distribution of ***color*** ***centers*** the model was proposed which explains the time and temp. dependencies of ***bleaching*** of radiation-colored ***glasses*** . From anal. of exptl. results in terms of this model the such deactivation energy distributions were obtained. The method of prediction of ionizing radiation effect on induced absorption of optical systems is presented.
ST evaluation effect space corpuscular radiation optical ***glass*** modeling
IT Relaxation
(absorption relaxation after irradn. of optical ***glass***)
IT Coloring
(corpuscular radiation coloration in optical ***glasses***)
IT Energy
(energy distribution of ***color*** ***centers*** in irradiated optical ***glass***)
IT Cosmic ray
(engineering evaluation of effect of space corpuscular radiation on optical ***glass*** absorption)
IT Optical ***glass***
RL: PRP (Properties)
(engineering evaluation of effect of space corpuscular radiation on optical ***glass*** absorption)
IT ***Bleaching***
(of radiation-induced darkening in optical ***glasses***)
IT Simulation and Modeling, physicochemical
(of time and temp. dependencies of ***bleaching*** of radiation-colored ***glasses***)

L5 ANSWER 31 OF 124 CAPLUS
AN 1999:283026 CAPLUS
DN 131:22129
ED Entered STN: 10 May 1999
TI Ab initio calculations of optical characteristics of twofold-coordinated silicon and germanium atoms in doped silica ***glass***
AU Zyubin, A. S.; Sulimov, V. B.
CS Institute of New Chemical Problems, Russian Academy of Sciences, Moscow, 142432, Russia
SO Glass Physics and Chemistry (Translation of Fizika i Khimiya Stekla) (1999), 25(2), 111-119
CODEN: GPHCEE; ISSN: 1087-6596
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB The first excited electronic states of defects formed by twofold-coordinated silicon and germanium atoms in germanium-doped silica ***glass*** are calcd. within the ab initio cluster approach. It is

found that the optical parameters calcd. for defects with the use of electron correlation and two-exponential basis sets with polarization are in good agreement with the exptl. characteristics of oxygen-deficient ***centers*** in pure and doped silica ***glasses*** . It is shown that the defects under consideration cannot be ***bleached*** by one-photon excitation into the absorption band at about 5 eV, and their ionization does not lead to the formation of structures characterized by the optical absorption band of the E'- ***center*** .

ST optical characteristic twofold coordinated silicon germanium doped silica ***glass*** ; excited electronic state defect germanium doped silica ***glass***

IT ***Color*** ***centers***
Defects in solids
Excited electronic state
Optical absorption
(ab initio calcns. of optical characteristics of twofold-coordinated silicon and germanium atoms in doped silica ***glass***)

IT 7440-21-3, Silicon, properties
RL: PRP (Properties)
(ab initio calcns. of optical characteristics of twofold-coordinated silicon and germanium atoms in doped silica ***glass***)

IT 7440-56-4, Germanium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(dopant; ab initio calcns. of optical characteristics of twofold-coordinated silicon and germanium atoms in doped silica ***glass***)

IT 60676-86-0, Vitreous silica
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(germanium-doped; ab initio calcns. of optical characteristics of twofold-coordinated silicon and germanium atoms in doped silica ***glass***)

RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Carbonaro, C; J Non-Cryst Solids 1997, V221, P89 CAPLUS
(2) Carsky, P; Lecture Notes in Chemistry 1980, V16
(3) Clark, T; A Handbook of Computational Chemistry 1985
(4) Clark, T; Komp'yuternaya khimiya 1990
(5) Foresman, J; J Chem Phys 1992, V96, P135 CAPLUS
(6) Frisch, M; Chem Phys Lett 1992, V189(6), P524 CAPLUS
(7) Frisch, M; Exploring Chemistry with Electronic Structure Methods 1995
(8) Frisch, M; Gaussian 94 (Revision D 1) 1995
(9) Frisch, M; J Chem Phys 1984, V80, P3265 CAPLUS
(10) Hay, P; J Chem Phys 1977, V66, P4377 CAPLUS
(11) Hehre, W; J Chem Phys 1972, V56, P2257 CAPLUS
(12) Hosono, H; Jpn J Appl Phys, Part 2 1996, V35(2B), PL234 CAPLUS
(13) Huzinaga, S; Gaussian Basis Sets for Molecular Calculations 1984
(14) Kashyap, R; Opt Fiber Technol 1994, V1, P17
(15) Krishnan, R; J Chem Phys 1980, V72(1), P650 CAPLUS
(16) Nelson, C; J Am Ceram Soc 1960, V43(8), P396
(17) Pacchioni, G; J Non-Cryst Solids 1997, V216, P1 CAPLUS
(18) Pacchioni, G; Phys Rev B: Condens Matter 1998, V57, P818 CAPLUS
(19) Pople, J; Int J Quantum Chem, Quantum Chem Symp 1976, 10, P1
(20) Pople, J; J Phys Chem 1985, V89, P2198 CAPLUS
(21) Poumellec, B; J Phys III 1996, V6, P1595 CAPLUS
(22) Schmidt, M; J Comput Chem 1993, V14, P1347 CAPLUS
(23) Skuja, L; J Non-Cryst Solids 1992, V149(1), P77
(24) Skuja, L; J Non-Cryst Solids 1994, V167, P229 CAPLUS
(25) Snyder, K; Phys Rev B: Condens Matter 1993, V48(18), P13238 CAPLUS
(26) Sokolov, V; Phys Status Solidi B 1994, V186, P185 CAPLUS
(27) Stefanov, B; Phys Rev B: Condens Matter, part I 1997, V56(9), P5035 CAPLUS
(28) Sulimov, V; J Non-Cryst Solids 1995, V191, P260 CAPLUS
(29) Sulimov, V; Photosensitivity and Quadratic Nonlinearity in Glass Waveguide: Fundamentals and Applications 1995, V22, PPD3-1
(30) Sulimov, V; Phys Status Solidi A 1996, V158, P155 CAPLUS
(31) Sulimov, V; Phys Status Solidi B 1996, V196, P175 CAPLUS
(32) Sulimov, V; Quantum Electronics 1996, V26(11), P988
(33) Weeks, R; J Appl Phys 1956, V27(11), P1376
(34) Zhang, B; Phys Rev B: Condens Matter, part II 1997, V55(24), PR15993 CAPLUS

L5 ANSWER 32 OF 124 CAPLUS

AN 1999:245049 CAPLUS
DN 130:270608
ED Entered STN: 21 Apr 1999
TI On the interaction of ***glasses*** with high-energy radiation. Combined ESR and optical studies
AU Nofz, Marianne; Reich, Christian; Stoesser, Reinhard; Bartoll, Jens; Janata, Eberhard
CS Labor V. 43 "Glas Glaskeramik", Bundesanstalt Materialforschung -Pruefung, Berlin, D-12489, Germany
SO Glass Science and Technology (Frankfurt/Main) (1999), 72(3), 76-90
CODEN: GSTEEX; ISSN: 0946-7475
PB Verlag der Deutschen Glastechnischen Gesellschaft
DT Journal
LA English
CC 57-1 (Ceramics)
AB Some aspects of the induced phys. processes and chem. reactions are discussed, which are obsd. when silicate and aluminosilicate ***glasses*** are exposed to UV radiation (248 nm; excimer laser), .gamma. radiation (60Co) and pulses of fast electrons (3.8 MeV). The stimulated emission and absorption of short-lived defects and Cerenkov radiation are detected in the optical range of 200-800 nm and on the microsecond time scale. Stable hole ***centers*** (Si-O-/h+, Si-O-Al/h+) and electron ***centers*** (among others Zn+, Cd+, (Fe3+)-) are detected by ESR spectroscopy at room temp. They show surprising differences in regard to their thermal stability, i.e., the distribution and mean value of their trap depths. Induced absorption in the UV/VIS range exhibits broad and overlapping bands, some of which can be partially assigned to ***centers*** detected by ESR spectroscopy. Therefore, UV/VIS spectroscopy provides complementary information, an induced absorption at 300 nm for example, which has no analogy in ESR measurements.
ST high energy radiation induced defect ***glass*** ESR UV; hole ***center*** high energy irradiated ***glass*** ; electron ***center*** high energy irradiated ***glass*** ; Cherenkov radiation high energy irradiated ***glass*** ; colored ***glass*** high energy irradn thermoluminescence
IT ***Color*** ***centers***
(V; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT ***Glass*** , processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(colored, radiation induced; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT ***Bleaching***
(fluorescent; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT Cherenkov radiation
Color ***centers***
ESR (electron spin resonance)
Thermoluminescence
UV and visible spectra
UV laser radiation
(interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT Aluminosilicate ***glasses***
Silicate ***glasses***
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT Electron beams
Gamma ray
(irradn.; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT Defects in solids
Defects in solids
(radiation-induced; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
IT Radiation damage
Radiation damage
(solid-state defects; interaction of ***glasses*** with high-energy

radiation studied with combined ESR and optical methods)
IT ***Bleaching***
(thermal; interaction of ***glasses*** with high-energy radiation studied with combined ESR and optical methods)
RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Ades, C; J Non-Cryst Solids 1990, V125, P272 CAPLUS
(2) Anon; Kleine Enzyklopadie Atom 1970, P182
(3) Arbuzov, W; Fiz Chim Stekla 1987, V13(4), P625
(4) Bartoll, J; Humboldt-Universitat, Berlin, thesis 1998
(5) Berthold, W; SPIE 1994, V2425, P74
(6) Buchmayer, G; J Non-Cryst Solids 1996, V204(3), P253 CAPLUS
(7) Cases, R; Nucl Instrum Methods Phys Res 1984, VB1, P503
(8) Dianov, E; SPIE 1994, V2425, P148 CAPLUS
(9) Dickinson, J; Lect Notes Phys (Laser Ablation Mech Appl) 1991, V389, P301 CAPLUS
(10) Dooryhee, E; Nucl Instrum Methods Phys Res 1988, VB32, P264 CAPLUS
(11) Dutt, D; Ceramic Transactions 1992, V28, P111 CAPLUS
(12) Dutt, D; J Non-Cryst Solids 1991, V130, P41 CAPLUS
(13) Ehrt, D; Methods Phys Res B 1992, V65, P1
(14) El-Batal, H; Nucl Sci J 1994, V31(2), P73 CAPLUS
(15) Ezz-Eldin, F; Radiat Phys Chem 1994, V44(1/2), P39
(16) Fabian, H; SPIE 1992, V1791, P297
(17) Falbe, J; Rompp Chemie-Lexikon. 9. Aufl 1995, V1, P624
(18) Farmer, V; SPIE 1992, V1761, P14
(19) Friebele, E; Glass II, Treatise on Materials Science and Technology 1979, V17, P257 CAPLUS
(20) Friebele, E; Proc 2nd Int Conf 1987, P203 CAPLUS
(21) Glebov, L; Sov J Glass Phys Chem 1990, V16(1), P31
(22) Griscom, D; J Non-Cryst Solids 1980, V40, P211 CAPLUS
(23) Griscom, D; J Non-Cryst Solids 1984, V64, P229 CAPLUS
(24) Hart, E; The hydrated electron 1979, P41
(25) Henschel, H; SPIE 1994, V2425, P21 CAPLUS
(26) Hillrichs, G; Appl Phys 1992, VB54, P208 CAPLUS
(27) Janata, E; Radiat Phys Chem 1994, V44(5), P449 CAPLUS
(28) Janata, E; Radiat Phys Chem 1996, V47(1), P29 CAPLUS
(29) Janata, E; Radiat Phys Chem 1998, V51(1), P65 CAPLUS
(30) Kanofsky, S; SPIE 1992, V1791, P164
(31) Levy, P; SPIE 1985, V541, P2 CAPLUS
(32) Nofz, M; Fundamentals of Glass Science and Technology 1997, P652 CAPLUS
(33) Nofz, M; Phys Chem Glasses 1990, V31(2), P57 CAPLUS
(34) Nofz, M; Proc International Symposium on Glass Problems, Istanbul (Turkey) 1996 1996, V1, P94
(35) Nofz, M; XVIII International Congress on Glass 1998
(36) Nofz, M; Zentralinstitut f Anorganische Chemie Akademie d Wissenschaften d DDR Berlin thesis 1990
(37) Popp, P; Proc 2nd Conference European Society of Glass Science and Technology, Suppl to Riv Stn Sper Vetro 1993, V23, P519
(38) Rajaram, M; J Non-Cryst Solids 1989, V108, P1 CAPLUS
(39) Schpolski, E; Atomphysik TI 19 Aufl 1993, P245
(40) Silin, A; J Non-Cryst Solids 1991, V129, P40 CAPLUS
(41) Smets, B; Phys Chem Glasses 1981, V22(6), P158 CAPLUS
(42) Speit, B; Nucl Instrum Methods Phys Res 1992, VB65, P384 CAPLUS
(43) Steele, F; Phys Chem Glasses 1965, V6(6), P246 CAPLUS
(44) Stosser, R; Exp Tech Phys 1988, V36(4/5), P327
(45) Stosser, R; In Prep
(46) Stosser, R; Proc 2nd Conference European Society of Glass Science and Technology, Suppl to Riv Stn Sper Vetro 1993, V23, P523
(47) Stosser, R; Proc 3rd Conference European Society of Glass Science and Technology Fundamentals of Glass Science and Technology, Glastech Ber Glass Sci Technol 1995, V68 C1, P188
(48) Stosser, R; Unpubl res
(49) Volkel, G; phys stat sol (a) 1988, V109, P295
(50) Weeks, R; J Non-Cryst Solids 1992, V149, P122 CAPLUS
(51) Wong, J; Glass Structure by spectroscopy 1976, P612
(52) Zhu, Z; Nucl Instrum Methods Phys Res B 1994, V91, P269 CAPLUS
(53) Zmuda, W; SPIE 1992, V1791, P329

L5 ANSWER 33 OF 124 CAPLUS
AN 1998:651505 CAPLUS
DN 129:308470
ED Entered STN: 15 Oct 1998

TI Optimization of preparative and performance parameters on electrochromic properties of electrochemically deposited tungsten oxide films
AU Hutchins, Michael G.; Kamel, Nasser A.; El-Kadry, Nabila; Ramadan, Ahmed A.; Abdel-Hady, Kamal
CS Physics Department, Faculty of Science, Minia University, Egypt
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1998), 37(9A), 4812-4817
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Tungsten oxide films of 240-1080 nm thickness were deposited on indium tin oxide (ITO) coated ***glass*** substrates using an electrochem. deposition technique. All films were amorphous, as proved by x-ray diffraction (XRD), and had an elec. resistivity of 106 .OMEGA.-cm and spectral transmittance exceeding 75% in the visible region. The electrochromic (EC) properties were measured in situ during coloration and ***bleaching*** cycles. The EC parameters, Tsbol,Tscol, .DELTA.Tsol and .DELTA.(OD)sol and the solar coloration efficiency .eta.sol were evaluated at different prepn. and performance parameters. The results showed that at small film thickness, the solar coloration efficiency changes linearly and tends toward satn. at larger thickness. At coloration potentials .gtoreq.2 V, the solar coloration efficiency is almost const. whereas the active sites are transformed to ***color*** ***centers*** . In contrast, the efficiency has an exponential dependence on electrolyte concn. The optimum values are: film thickness = 1080 nm, coloration potential - 2 V and electrolyte concn. = 0.4 M. The corresponding EC parameters are: .DELTA.Tsol = 0.458, .DELTA.(OD)sol = 0.632 and .eta.sol = 34 cm2/C.
ST electrochem deposition tungsten oxide electrochromism optimization
IT Films
Films
(electrochromic; optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
IT Electrochromic materials
Electrochromic materials
(films; optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
IT ***Color*** ***centers***
Electric resistance
Electrochromism
Electrodeposition
Optical transmission
Optimization
(optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
IT ***Glass*** , miscellaneous
RL: MSC (Miscellaneous)
(optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
IT 50926-11-9, ITO
RL: MSC (Miscellaneous)
(optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
IT 1314-35-8, Tungsten oxide, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(optimization of preparative and performance parameters on electrochromic properties of electrochem. deposited tungsten oxide films)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Akram, H; J Appl Phys 1989, V66, P4364 CAPLUS
(2) Brotherston, I; Sol Energy Mater & Sol Cells 1995, V39, P257 CAPLUS
(3) Cogan, S; Proc SPIE 1989, V1149 CAPLUS

(4) Deb, S; Appl Opt Suppl 1969, V3, P193
(5) Deb, S; Philos Mag 1973, V27, P801 CAPLUS
(6) Demiryont, H; Proc SPIE 1990, V1329, P171
(7) Demiryont, H; Proc SPIE 1991, V1536, P2 CAPLUS
(8) Faughanen, B; Top Appl Phys 1988, V40, P181
(9) Hutchins, M; To be published in Egypt J Sol 1998
(10) Kitao, M; Sol Energy Mater & Sol Cells 1995, V39, P115 CAPLUS
(11) Kitao, M; Sol Energy Mater Sol Cells 1992, V25, P241 CAPLUS
(12) Lynam, N; SPIE 1988, Is4
(13) Miyake, K; J Appl Phys 1982, V35, P1511
(14) Selkowitz, S; Proc SPIE 1988, IS4, P22
(15) Wang, H; Sol Energy Mater Sol Cells 1996, V43, P345 CAPLUS
(16) Wang, J; Sol Energy Mater & Sol Cells 1996, V43, P377 CAPLUS
(17) Yoshino, T; Sol Energy Mater & Sol Cells 1995, V39, P391 CAPLUS

AN 1998:616344 CAPLUS
DN 129:323563
ED Entered STN: 30 Sep 1998
TI Difference in the behavior of oxygen deficient defects in Ge-doped silica optical fiber preforms under ArF and KrF excimer laser irradiation
AU Essid, M.; Brebner, J. L.; Albert, J.; Awazu, K.
CS Physics Department, Groupe de Recherche en Physique et Technologie des Couches Minces, Station Centre-ville, Universite de Montreal, Montreal, QC, H3C 3J7, Can.
SO Journal of Applied Physics (1998), 84(8), 4193-4197
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Photobleaching of optical absorption bands in the 5 eV region and the creation of others at higher and lower energy were examd. in the case of ArF (6.4 eV) and KrF (5 eV) excimer laser irradn. of 3GeO2:97SiO2 ***glasses*** . A difference is reported in the transformation process of the neutral O monovacancy and also of the Ge lone pair ***center*** (GLPC) into electron trap ***centers*** assocd. with 4-fold coordinated Ge ions and Ge E' ***centers*** when 1 or the other laser is used. Correlations between absorption bands and ESR signals were made after different steps of laser irradn. The KrF laser generates twice as many Ge E' ***centers*** as the ArF laser for the same dose of energy delivered. The main reason for this difference is the more efficient ***bleaching*** of the GLPC (5.14 eV) by the KrF laser compared to that by the ArF laser.
ST oxygen defect germanium silica fiber laser
IT ***Color*** ***centers***
(E', germanium; difference in behavior in germanium-doped silica optical fiber preforms under excimer laser irradn.)
IT Optical fibers
(difference in behavior under excimer laser irradn. of oxygen deficient defects in germanium-doped silica preforms)
IT Laser radiation
(excimer; difference in behavior of oxygen deficient defects in germanium-doped silica optical fiber preforms under)
IT ***Bleaching***
(fluorescent; of oxygen deficient defects in germanium-doped silica optical fiber preforms under excimer laser irradn.)
IT ESR (electron spin resonance)
Optical absorption
(of oxygen deficient defects in germanium-doped silica optical fiber preforms under excimer laser irradn.)
IT Defects in solids
(oxygen deficient; difference in behavior in germanium-doped silica optical fiber preforms under excimer laser irradn.)
IT 60676-86-0, Silica, vitreous
RL: DEV (Device component use); USES (Uses)
(difference in behavior under excimer laser irradn. of oxygen deficient defects in optical fiber preforms of germanium-doped)
IT 7440-56-4, Germanium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(difference in behavior under excimer laser irradn. of oxygen deficient

defects in optical fiber preforms of silica doped with)
RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Albert, J; Appl Phys Lett 1995, V67, P3529 CAPLUS
(2) Albert, J; OSA Technical Digest Series 1995, V22, P229
(3) Albert, J; Opt Lett 1994, V19, P387 CAPLUS
(4) Allard, L; Opt Lett 1997, V22, P819 CAPLUS
(5) Awazu, K; J Appl Phys 1990, V68, P2713 CAPLUS
(6) Awazu, K; J Non-Cryst Solids 1997, V211, P158 CAPLUS
(7) Friebele, E; Defects in Glasses, Materials Research Society Proceedings 1986, V61, P319 CAPLUS
(8) Fujimaki, M; Phys Rev B 1996, V53, P9859 CAPLUS
(9) Gallagher, M; J Appl Phys 1993, V74, P2771 CAPLUS
(10) Hill, K; Appl Phys Lett 1978, V32, P647
(11) Hosono, H; Jpn J Appl Phys, Part 2 1996, V35, PL234 CAPLUS
(12) Hosono, H; Phys Rev B 1992, V46, P11445 CAPLUS
(13) Hosono, H; Phys Rev B 1996, V53, PR11921 CAPLUS
(14) Neustruev, V; J Phys:Condens Matter 1994, V6, P6901 CAPLUS
(15) Nishii, J; Opt Lett 1995, V20, P1184 CAPLUS
(16) Nishii, J; Phys Rev B 1995, V52, P1661 CAPLUS
(17) Simmons, K; Opt Lett 1991, V16, P141 CAPLUS
(18) Skuja, L; J Non-Cryst Solids 1992, V149, P77 CAPLUS
(19) Tsai, T; Opt Lett 1989, V14, P1023 CAPLUS
(20) Watanabe, Y; Jpn J Appl Phys, Part 1 1986, V25, P425 CAPLUS

L5 ANSWER 35 OF 124 CAPLUS
AN 1997:675445 CAPLUS
DN 127:285137
ED Entered STN: 24 Oct 1997
TI Comparison of the influence of the fictive and the annealing temperature on the UV-transmission properties of synthetic fused silica
AU Uhl, V.; Greulich, K. O.; Thomas, S.
CS Institut Molekulare Biotechnologie, Jena, D-07708, Germany
SO Applied Physics A: Materials Science & Processing (1997), 65(4/5), 457-462
CODEN: APAMFC; ISSN: 0947-8396
PB Springer
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Irradn. of extremely pure synthetic fused SiO2 ***glass*** with KrF excimer laser radiation (248 nm) induces an absorption band at 210 nm and a luminescence band with max. at 650 nm by generation of point defect ***centers*** (E' and NBOH). Samples with high OH content exhibit gradual recovery from the absorption band within several minutes after exposure to the KrF laser radiation. The formation of the KrF laser-induced 210 nm absorption band depends on the fictive temp. and on the OH content. Low fictive temp., as a measure for the no. of intrinsic defects, retards E' generation at the beginning of intense KrF excimer laser irradn. when the majority of defects are generated from precursor defects. However, for longer irradn. periods with pulse nos. of the order of 105 pulses, a high OH content is the beneficial parameter. The accompanying at. H is essential for the suppression of the 210 nm absorption band. This happens by transformation of the E' ***centers*** into Si-H defects. In contrast to a generally held view, annealing (decreasing of the fictive temp.) of fused SiO2 does not always reduce UV-induced defect generation. For example, annealing of the samples in an argon atm. causes a significantly higher 210 nm absorption increase during KrF excimer laser irradn. (240000 pulses) compared to nonannealed samples. Two spectroscopic methods to det. the OH content of fused SiO2 were applied: Raman and IR spectroscopy, which in this work lead to differing results. The energetics of the 210 nm absorption band generation and ***bleaching*** is summarized by a diagram explaining the interaction of the 248 nm laser radiation with fused SiO2.
ST fused silica laser irradn point defect; UV absorption luminescence fused silica defect; hydroxyl content Raman fused silica annealing
IT ***Color*** ***centers***
(E'; annealing effect on laser-induced point defect ***centers*** causing UV absorption and luminescence in synthetic fused silica)
IT Point defects
(NBOH ***centers*** ; annealing effect on laser-induced point defect ***centers*** causing UV absorption and luminescence in synthetic

fused silica)
IT Hydroxyl group
IR spectra
Raman spectra
(annealing effect on OH content in synthetic fused silica studied by Raman and IR spectroscopy)
IT Annealing
Laser radiation
Luminescence
Radiation induced crystal defects
UV absorption
(annealing effect on laser-induced point defect ***centers*** causing UV absorption and luminescence in synthetic fused silica)
IT 60676-86-0, Fused silica
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(annealing effect on laser-induced point defect ***centers*** causing UV absorption and luminescence and on OH content in synthetic fused silica)

L5 ANSWER 36 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:143771 CAPLUS
DN 126:230902
ED Entered STN: 05 Mar 1997
TI Modification of the properties of silica ***glasses*** by ion implantation
AU Brebner, John L.; Allard, Louis B.; Verhaegen, Marc; Essid, Mourad; Albert, Jacques; Simpson, Peter; Knights, Andrew
CS Department de Physique, Universite de Montreal, Ottawa, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (1997), 2998(Photosensitive Optical Materials and Devices), 122-131
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB High energy MeV ion implantation of fused SiO2 and Ge-doped SiO2 renders these materials photosensitive. The phys. processes involved are closely related to the photosensitization of Ge-doped SiO2 by UV irradn. but present certain characteristics that are different. The authors discuss the results of studies of the induced absorption and refractive index changes under different prepn. conditions, annealing sequences and subsequent ***bleaching*** by ArF and KrF excimer radiation. The authors include the results of a study using positron annihilation spectroscopy of the defects introduced by ion implantation and subsequent annealing and ***bleaching*** .
ST modification property silica ***glass*** ion implantation; ***color*** ***center*** refractive index silicate ***glass*** ; visible spectra annealing germanosilicate ***glass***
IT Annealing
Color ***centers***
Optical absorption
Refractive index
UV and visible spectra
(modification of properties of silica ***glasses*** by ion implantation)
IT Germanosilicate ***glasses***
RL: PRP (Properties)
(modification of properties of silica ***glasses*** by ion implantation)
IT 7631-86-9, Silica, properties
RL: PRP (Properties)
(fused; modification of properties of silica ***glasses*** by ion implantation)
IT 7440-56-4, Germanium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(modification of properties of silica ***glasses*** by ion implantation)

L5 ANSWER 37 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:122983 CAPLUS

DN 126:218409
ED Entered STN: 22 Feb 1997
TI Photobleaching of thulium-doped ZBLAN fibers with visible light
AU Laperle, P.; Chandonnet, A.; Vallee, R.
CS National Optics Institute, Sainte-Foy, QC, G1P 4N8, Can.
SO Optics Letters (1997), 22(3), 178-180
CODEN: OPLEDP; ISSN: 0146-9592
PB Optical Society of America
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB Photobleaching of darkened thulium-doped ZBLAN fibers is obsd. after short exposure to visible light. The ***bleaching*** process is characterized by a stretched-exponential function of time with an exponent .beta. independent of both the ***bleaching*** intensity and the thulium concn. The ***bleaching*** rate 1/.tau. is also shown to scale linearly with the ***bleaching*** intensity and to have a 1/3-power dependence on the thulium concn. Incomplete and slow recovery of the ***color*** ***centers*** is obsd. in previously ***bleached*** fibers, suggesting the presence of at least two types of defect.
ST photobleaching darkened thulium doped ZBLAN fiber; ***color*** ***center*** thulium doped ZBLAN fiber
IT Optical waveguides
(fiber; photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
IT ***Color*** ***centers***
(incomplete and slow recovery of ***color*** ***centers*** in previously ***bleached*** thulium-doped ZBLAN fibers)
IT Waveguides
Waveguides
(laser; photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
IT Photochemical ***bleaching***
(photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
IT ZBLAN ***glasses***
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
IT Lasers
Lasers
(waveguide; photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
IT 7440-30-4, Thulium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(photobleaching of darkened thulium-doped ZBLAN fibers with visible light)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Atkins, G; Opt Lett 1994, V19, P874 CAPLUS
(2) Barber, P; Opt Lett 1995, V20, P2195 CAPLUS
(3) Booth, I; IEEE J Quantum Electron 1996, V32, P118 CAPLUS
(4) Booth, I; Opt Lett 1996, V21, P348 CAPLUS
(5) Booth, I; Photosensitivity and Quadratic Nonlinearity in Glass Waveguides:Fundamentals and Applications, 1995 OSA Technical Digest Series paper PMD6 1995, V22
(6) Brocklesby, W; Opt Lett 1993, V18, P2105 CAPLUS
(7) Broer, M; Opt Lett 1993, V18, P799 CAPLUS
(8) Broer, M; Proc SPIE 1993, V2044, P316 CAPLUS
(9) Dianov, E; Sov J Quantum Electron 1979, V9, P636
(10) France, P; Fluoride Glass Optical Fibres 1990, P159
(11) Friebele, E; Appl Opt 1981, V20, P3448 CAPLUS
(12) Friebele, E; J Non-Cryst Solids 1985, V72, P221 CAPLUS
(13) Laperle, P; Opt Lett 1995, V20, P2484 CAPLUS
(14) Laperle, P; Photosensitivity and Quadratic Nonlinearity in Glass Waveguides:Fundamentals and Applications, 1995 OSA Technical Digest Series paper PMD5 1995, V22
(15) Millar, C; Electron Lett 1988, V24, P590
(16) Neveux, D; Appl Opt 1993, V32, P3952 CAPLUS

(17) Palmer, R; Phys Rev Lett 1984, V53, P958
(18) Williams, G; Proc SPIE 1993, V2044, P322 CAPLUS

L5 ANSWER 38 OF 124 CAPLUS
AN 1997:70121 CAPLUS
DN 126:204853
ED Entered STN: 31 Jan 1997
TI Absorption spectral changes with ultraviolet-illumination in GeO2-SiO2 ***glass*** films prepared by sputtering deposition
AU Nishii, Junji; Yamanaka, Hiroshi; Hosono, Hideo; Kawazoe, Hiroshi
CS Osaka Natl. Res. Inst., AIST, Ikeda, 563, Japan
SO Radiation Effects and Defects in Solids (1995), 136(1-4), 1043-1046
CODEN: REDSEI; ISSN: 1042-0150
PB Gordon & Breach
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The absorption band peaking at 5.17 eV, which is due to neutral O deficient vacancy, in radiofrequency-sputter deposited GeO2-SiO2 thin ***glass*** films was ***bleached*** by UV-illumination, and an intense absorption band was induced around 6.4 eV. The refractive index change calcd. via Kramers-Kronig relations was of the order of 10-4, which was higher by one order of magnitude than those of bulk germanosilicate ***glasses*** prepd. by VAD method. The concn. of Ge E' ***centers*** increased with the intensity of the 6.4 eV band. The oscillator strength of the 6.4 eV band, however, exceeded unity on the assumption that Ge E' ***centers*** exclusively induce this band. It was, therefore, concluded that only Ge E' ***center*** but also other photochem. induced ***color*** ***centers*** give the 6.4 eV band, which is the origin of large refractive index change.
ST absorption spectral change germanosilicate ***glass*** ; UV illumination germanium oxide silica ***glass*** ; sputtering deposition ***glass*** ***color*** ***center***
IT ***Color*** ***centers***
Optical absorption
Oscillator strength
Refractive index
Sputtering
UV radiation
(absorption spectral changes with UV-illumination in GeO2-SiO2 ***glass*** films prepd. by sputtering deposition)
IT Germanosilicate ***glasses***
RL: PRP (Properties)
(absorption spectral changes with UV-illumination in GeO2-SiO2 ***glass*** films prepd. by sputtering deposition)
IT 1310-53-8, Germanium dioxide, properties
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(absorption spectral changes with UV-illumination in GeO2-SiO2 ***glass*** films prepd. by sputtering deposition)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Atkins, R; Electron Lett 1992, V28, P1743
(2) Atkins, R; Electron Lett 1993, V29, P385 CAPLUS
(3) Hand, D; Opt Lett 1990, V15, P102 CAPLUS
(4) Hill, K; Appl Phys Lett 1978, V32, P647
(5) Hosono, H; Phys Rev 1992, VB46, P11445
(6) Kashyap, R; Appl Phys Lett 1993, V62, P214 CAPLUS
(7) Nishii, J; Appl Phys Lett 1994, V64, P282 CAPLUS
(8) Roman, J; Opt Lett 1993, V18, P808 CAPLUS
(9) Smakula, A; Z Phys 1930, V59, P603 CAPLUS
(10) St Russell, P; Proc SPIE 1991, V1516, P47

L5 ANSWER 39 OF 124 CAPLUS
AN 1996:671482 CAPLUS
DN 126:67287
ED Entered STN: 13 Nov 1996
TI Formation and ***bleaching*** of induced ***color*** ***centers*** in gamma-irradiated vanadium-containing alkali-borate ***glasses***
AU Ezz-Elkin, F. M.; Elalaily, N. A.; El-Batal, H. A.; Ghoneim, N. A.
CS Natl. Cent. for Radiation Research Technol., Cairo, Egypt

SO Radiation Physics and Chemistry (1996), 48(5), 659-664
CODEN: RPCHDM; ISSN: 0146-5724
PB Elsevier
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB The nature of radiation-induced defects and defect generation process in ***glasses*** of the base compn. B2O3 and R2O + 0.5 g V2O5, where R is Li2O, Na2O or K2O were studied. The ***glasses*** were exposed to successive irradn. doses up to 17 kGy and their optical absorption spectra were measured in the range of 200-100 nm. Three factors were investigated: the role of V2O5, the effect of chem. spectra have been shown to reveal the presence of V3+, V4+ and V5+ ions altogether in varying proportions. The response of the ***glass*** to irradn. is related to the competition between formation and annihilation of induced defects and hence the obsd. characteristic ***color*** ***centers*** . The rate of thermal ***bleaching*** at interval times was discussed.
ST ***color*** ***center*** vanadium alkali borate ***glass*** ; radiolysis vanadium alkali borate ***glass***
IT Borate ***glasses***
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(alkali metal borate; formation and ***bleaching*** of ***color*** ***centers*** in gamma-irradiated vanadium-contg. alkali-borate ***glasses***)
IT ***Color*** ***centers***
Radiolysis
UV and visible spectra
(formation and ***bleaching*** of ***color*** ***centers*** in gamma-irradiated vanadium-contg. alkali-borate ***glasses***)
IT 1303-86-2, Boron oxide(B2O3), processes 1314-62-1, Vanadium oxide(V2O5), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(***glass*** ; formation and ***bleaching*** of ***color*** ***centers*** in gamma-irradiated vanadium-contg. alkali-borate ***glasses***)

L5 ANSWER 40 OF 124 CAPLUS
AN 1996:533440 CAPLUS
DN 125:254711
ED Entered STN: 06 Sep 1996
TI Comparison of formation process of ultraviolet induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted SiO2
AU Nishii, Junji; Chayahara, Akiyoshi; Fukumi, Kohei; Fujii, Kanenaga; Yamanaka, Hiroshi; Hosono, Hideo; Kawazoe, Hiroshi
CS Osaka National Research Institute, AIST, 1-8-31 Midorigaoka, Ikeda, Osaka, 563, Japan
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (1996), 116(1-4), 150-153
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier
DT Journal
LA English
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB Photochem. reactions induced by UV excimer lasers were investigated by ESR and optical absorption in a 10GeO2-90SiO2 (mol%) ***glass*** fiber preform and a SiO2 ***glass*** implanted with Ge+ ions (1.times.1016 cm-2). Electron trapped ***centers*** assocd. with fourfold coordinated Ge ion (GEC) were formed in the former by irradn. with KrF laser (5 eV) or ArF (6.3 eV) laser pulses. The concn. of GECs increased as the square of the laser power, which means that the formation reaction of GEC proceeds via a two-photon absorption process. Si E' ***centers*** (.cntdot.Si.tplbond.O3, full width at half max. (FWHM) = 3 G) and peroxy radicals (PORs: Si-O-O.cntdot. or O-2) were formed in the SiO2 ***glass*** implanted with Ge ions, which could be ***bleached*** by UV irradn. or prolonged isochronal annealing. The exposure of the annealed ***glass*** to excimer laser pulses induced Si E' ***centers*** having identical FWHM with that obsd. in the

as-implanted ***glass*** . No UV-induced ESR signal related with Ge ion was confirmed before or after annealing. The intense UV absorption bands were induced both in fiber preform and implanted ***glasses*** , which should cause the pos. index change.

ST germanium silicate ***glass*** laser ***color*** ***center*** ; vitreous silica ***color*** ***center*** germanium implantation; UV ***color*** ***center*** germanium silicate ***glass***

IT Electron spin resonance
Optical absorption
(comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

IT ***Color*** ***centers***
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

IT ***Glass*** , oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(germanium silicate, comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

IT 60676-86-0, Silica, vitreous
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

IT 1310-53-8, Germanium oxide (GeO2), processes 60676-86-0
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(***glass*** , germanium silicate; comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

IT 7440-56-4, Germanium, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(implantation ion; comparison of formation process of UV-induced ***color*** ***centers*** in GeO2-SiO2 ***glass*** fiber preform and Ge-implanted vitreous silica)

L5 ANSWER 41 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1996:459767 CAPLUS

DN 125:153784

ED Entered STN: 03 Aug 1996

TI Photodegradation of near-infrared-pumped Tm3+-doped ZBLAN fiber upconversion lasers

AU Booth, Ian J.; Archambault, Jean-Luc; Ventrudo, Brian F.

CS SDL Optics, Inc., Saanichton, BC, V8M 1Z5, Can.

SO Optics Letters (1996), 21(5), 348-350
CODEN: OPLEDP; ISSN: 0146-9592

PB Optical Society of America

DT Journal

LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74, 75

AB Photodegrdn. was obsd. in Tm3+-doped ZBLAN fiber lasers pumped with laser diodes at 1135 nm. After upconversion lasing at 482 nm, the fiber develops ***color*** ***centers*** that absorb strongly at wavelengths .ltorsim.650 nm, affecting further upconversion lasing. The rate of damage formation is strongly dependent on the pump power level and on the Tm concn. The ***color*** ***centers*** are ***bleached*** by intense blue light but recover with thermal excitation and can be removed by thermal annealing at a temp. near 100.degree..

ST ***glass*** fiber ZBLAN laser photodegrdn; laser optical pump ***glass*** fiber upconversion; thulium doped ZBLAN fluorozirconate ***glass***

IT Annealing
Color ***centers***
Lasers
Optical fibers

Photolysis
Ultraviolet and visible spectra
(photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

IT Fluorescence
(upconversion; photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

IT ***Glass*** fibers, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(aluminum barium lanthanum sodium zirconium fluoride, photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

IT Optical property
(breakdown, photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

IT Optical nonlinear property
(up-conversion, photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

IT 7440-64-4, Ytterbium, properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(photodegrdn. of near-IR pumped Tm, Yb co-doped ZBLAN fiber upconversion lasers)

IT 7440-30-4, Thulium, properties 18923-27-8, Ytterbium(3+), properties 22541-23-7, Thulium(3+), properties
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(photodegrdn. of near-IR pumped Tm3+-doped ZBLAN fiber upconversion lasers)

L5 ANSWER 42 OF 124 CAPLUS

AN 1995:704064 CAPLUS

DN 123:241591

ED Entered STN: 27 Jul 1995

TI Photochemical reactions in GeO2-SiO2 ***glasses*** induced by ultraviolet irradiation: Comparison between Hg lamp and excimer laser

AU Nishii, Junji; Fukumi, Kohei; Yamanaka, Hiroshi; Kawamura, Ken-ichi; Hosono, Hideo; Kawazoe, Hiroshi

CS Optical Mat. Div., Osaka Natl. Res. Inst., Osaka, 563, Japan

SO Physical Review B: Condensed Matter (1995), 52(3), 1661-5
CODEN: PRBMDO; ISSN: 0163-1829

PB American Physical Society

DT Journal

LA English

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB GeO2-SiO2 ***glasses*** prepd. by vapor-phase axial deposition were exposed to UV radiation from a Hg discharge lamp (4.9 eV) and excimer lasers (KrF laser: 5.0 eV, XeCl laser: 4.0 eV). Two photochem. reaction channels were ascertained: (1) the exposure of the ***glasses*** to the Hg lamp radiation (.apprx.16 mW/cm2) induced Ge E' ***centers*** accompanied by ***bleaching*** of the absorption band due to oxygen-deficient defects near 5 eV (5-eV band) and the emergence of an intense band near 6.4 eV. (2) The irradn. with KrF and XeCl lasers (power densities of 10 and 90 mJ/cm12/pulse, resp., pulse duration of 20 ns) generated two types of paramagnetic defects, electron trapped ***centers*** assocd. with fourfold coordinated Ge ions (GEC) and a self-trapped hole ***center*** (STH: bridging oxygen trapping a hole). The former and the latter were considered to be caused via one-photon and two-photon absorption processes, resp. These alternative reactions proceeded independently depending on the power densities of uv photons. The formation of GEC's was satd. easily by irradn. with KrF laser pulses, and then the conversion of GEC to Ge E' ***centers*** was caused by prolonged irradn.

ST photoreaction silica germania ***glass*** UV induced

IT Paramagnetic ***centers***
Photolysis
(photochem. reactions in germania-silica ***glasses*** induced by UV light from Hg lamp and excimer lasers)

IT ***Color*** ***centers***
(E', photochem. reactions in germania-silica ***glasses*** induced by UV light from Hg lamp and excimer lasers)

IT ***Glass*** , oxide
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(germanium silicate, photochem. reactions in germania-silica ***glasses*** induced by UV light from Hg lamp and excimer lasers)
IT 1310-53-8, Germanium dioxide, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(***glass*** ; photochem. reactions in germania-silica ***glasses*** induced by UV light from Hg lamp and excimer lasers)

L5 ANSWER 43 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:633076 CAPLUS
DN 123:15643
ED Entered STN: 23 Jun 1995
TI Defect formation and evolution in TeO2-containing borosilicate ***glass*** films derived from a sol-gel process
AU Li, Guangming; Nogami, Masayuki; Abe, Yoshihiro
CS Dep. Mat. Sci. Eng., Nagoya Inst. Technol., Nagoya, 466, Japan
SO Physical Review B: Condensed Matter (1995), 51(21), 14930-5
CODEN: PRBMDO; ISSN: 0163-1829
PB American Physical Society
DT Journal
LA English
CC 57-1 (Ceramics)
AB Defects in ***glasses*** , such as the paramagnetic E' (a singly charged oxygen vacancy), the hydrogen-related doublets with different splittings, and the NBOHC's (nonbridging oxygen hole ***centers***), are generally induced by irradiating the ***glasses*** with highly energetic photons (particles) or laser beams. We find in the present work that the paramagnetic Te E' and hydrogen-related doublets with a splitting of 1.1, 7.4, and 11.9 mT can be produced by heating the sol-gel derived SiO2-B2O3-TeO2 ***glass*** films in a hydrogen atm. Optical ***color*** ***centers*** were also induced at 3.6, 4.0, and 4.2 eV, depending on the heat treatment conditions during the reducing process. On heating the reduced films in air, the paramagnetic NBOHC's occurred together with two optical absorption bands at 2.2 and 5.5 eV. The hydrogen-related defects can be clearly divided, by their different responses to the microwave power, into two groups. One includes the 1.1- and 7.4-mT doublets, which were recognized to be a variant of the Te E' ***center*** , and the other consists of the 11.9-mT doublet, which was a different defect species from the Te E' ***center*** . The Te E', 1.1-, and 7.4-mT doublets were ***bleached*** more easily than the 11.9-mT doublet at a high temp. in the hydrogen atm. The obsd. optical absorption bands at 3.6, 4.0, and 4.2 eV were tentatively attributed to some neutral oxygen vacancies on tellurium atoms in the structure, while the optical bands at 2.2 and 5.5 eV were assigned to the NBOHC's.
ST tellurium borosilicate ***glass*** film optical defect
IT Paramagnetic ***centers***
(optical defect formation and evolution in TeO2-contg. borosilicate ***glass*** films derived from a sol-gel process)
IT ***Glass*** , oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(tellurium borosilicate; optical defect formation and evolution in TeO2-contg. borosilicate ***glass*** films derived from a sol-gel process)
IT 1303-86-2, Boron oxide (B2O3), processes 7446-07-3, Tellurium oxide (TeO2) 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(***glass*** , tellurium borosilicate; optical defect formation and evolution in TeO2-contg. borosilicate ***glass*** films derived from a sol-gel process)

L5 ANSWER 44 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:259279 CAPLUS
DN 122:117123
ED Entered STN: 22 Dec 1994
TI Heavy fluoride ***glasses*** as an alternative to crystals in high energy physics calorimetry
AU Dafinei, I.; Auffray, E.; Lecoq, P.; Schneegans, M.

CS   CERN, Geneva, Switz.
SO   Materials Research Society Symposium Proceedings (1994), 348(Scintillator and Phosphor Materials), 217-21
     CODEN: MRSPDH; ISSN: 0272-9172
PB   Materials Research Society
DT   Journal
LA   English
CC   71-7 (Nuclear Technology)
AB   In the quest for low cost scintillators to equip the very large electromagnetic calorimeters for future high-energy physics expts., scintillating ***glasses*** can offer an attractive alternative to crystals. The expected prodn. price should be reduced as compared to crystals, esp. for very large vols. An intense R&D effort has been made by the Crystal Clear collaboration to develop heavy scintillating fluoride ***glasses*** in close collaboration with industry. Results are shown on the fluorescence and scintillation properties as well as on the radiation resistance of different types of fluoride ***glasses*** . Ideas about possible improvement of present performances are also given. After the anal. of several kinds of fluoride ***glasses*** , the cerium-doped fluorohafnate (HFG) ***glasses*** were selected for further study as a future ***glass*** scintillator. The radiation hardness of HFG ***glass*** is quite poor, but efficient and rapid optical ***bleaching*** may solve this problem.
ST   heavy fluoride ***glass*** particle physics calorimetry; cerium doped fluorohafniate ***glass*** particle calorimetry
IT   Radiation hardening
       (of cerium-doped fluorohafnate ***glass*** as scintillator for high-energy physics calorimetry by optical ***bleaching***)
IT   Fluorescence
     Scintillation
       (of heavy fluoride ***glasses*** for high-energy physics calorimetry)
IT   ***Color*** ***centers***
       (radiation hardening of cerium-doped fluorohafnate ***glass*** as scintillator for high-energy physics calorimetry by optical ***bleaching*** of)
IT   Radiation
       (radiation resistance of heavy fluoride ***glasses*** as scintillators for high-energy physics calorimetry)
IT   Radiation counters and detectors
       (calorimetric, heavy fluoride ***glasses*** as scintillators for high-energy physics calorimetry)
IT   ***Glass*** , nonoxide
     RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
       (fluoride, heavy fluoride ***glasses*** as scintillators for high-energy physics calorimetry)
IT   ***Glass*** , nonoxide
     RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
       (hafnium fluoride-contg., cerium-doped fluorohafnate ***glass*** as scintillator for high-energy physics calorimetry)
IT   7440-45-1, Cerium, uses
     RL: MOA (Modifier or additive use); USES (Uses)
       (cerium-doped fluorohafnate ***glass*** as scintillators for high-energy physics calorimetry)

L5   ANSWER 45 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1995:232482 CAPLUS
DN   122:41283
ED   Entered STN: 08 Dec 1994
TI   Effects of exposure to photons of various energies on transmission of germanosilicate optical fiber in the visible to near IR spectral range
AU   Anoikin, E. V.; Mashinsky, V. M.; Neustruev, V. B.; Sidorin, Y. S.
CS   General Physics Institute, Russian Academy of Sciences, 38 Vavilov Street, 117942, Moscow, Russia
SO   Journal of Non-Crystalline Solids (1994), 179, 243-53
     CODEN: JNCSBJ; ISSN: 0022-3093
PB   Elsevier
DT   Journal
LA   English
CC   73-3 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)

AB The origins of optical absorption induced in germanosilicate-core optical fiber by exposure to visible, UV and .gamma.-radiation were studied. The effects of exposure to 5.0 eV photons and .gamma. quanta are identical and strongly different from the effect of visible-range excitation. Based on the results of the photo- and thermal- ***bleaching*** expts., the absorption components belonging to the dominant ***color*** ***centers*** were identified. In case of 5.0 eV photons or .gamma.-irradn., a new band was revealed at 2.6 eV (480 nm) and ascribed to electron traps Ge X. In the case of visible-range excitation, the so-called low absorption tail dominated, caused by irreversible structural changes in ***glass*** . The effects of loss increase with heat treatment are compared between an as drawn fiber and a fiber exposed to visible light.

ST germania silica optical fiber spectra irradn

IT ***Color*** ***centers***
Gamma ray
Optical absorption
Optical fibers
Trapping and Traps
Ultraviolet and visible spectra
(effects of exposure to photons of various energies on transmission of germanosilicate optical fiber in visible to near IR spectral range)

IT Infrared spectra
(near-IR, effects of exposure to photons of various energies on transmission of germanosilicate optical fiber in visible to near IR spectral range)

IT 1310-53-8, Germania, properties 7631-86-9, Silica, properties
RL: PRP (Properties)
(effects of exposure to photons of various energies on transmission of germanosilicate optical fiber in visible to near IR spectral range)

L5 ANSWER 46 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1994:589729 CAPLUS

DN 121:189729

ED Entered STN: 15 Oct 1994

TI A novel polytungstate electrochromic polymer-modified electrode

AU Babinec, S. J.

CS Cent. Res. - Adv. Polym. Syst. Lab, Dow Chem. Co., Midland, MI, 48640, USA

SO Proceedings - Electrochemical Society (1994), 94-2, 30-46
CODEN: PESODO; ISSN: 0161-6374

DT Journal

LA English

CC 72-2 (Electrochemistry)
Section cross-reference(s): 73, 74

AB This report describes the prepn. and behavior of an electrochromic electrode formed by the electrostatic complexation of electrochromic polyoxometalates in a polycationic matrix, such as polyvinyl pyridinium. The electrodes are easily prepd. by soln. coating a host polymer film onto an ITO electrode, followed by soaking in a soln. of the ***color*** ***center*** . The electrodes so formed have excellent optical uniformity, a ***color*** similar to that of WO3, optical densities of >1.0A at .apprx.640 nm, and are stable to ***color*** / ***bleach*** cycling for .apprx.20,000 cycles in aq. acid. Further, they were successfully incorporated into a solid state electrochromic device.

ST polytungstate electrochromic polymer modified electrode; vinylpyridine styrene copolymer polytungstate modified electrode; tungstophosphate electrochromic polymer modified electrode; polyoxometalate electrochromic polymer modified electrode

IT Electrodes
(polytungstate electrochromic polymer-modified)

IT Optical imaging devices
(electrochromic, polytungstate electrochromic polymer-modified electrodes for)

IT Heteropoly acids
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(molybdophosphoric, polytungstate electrochromic polymer-modified electrode)

IT Heteropoly acids
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(tungstophosphoric, polytungstate electrochromic polymer-modified electrode)
IT Heteropoly acids
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(tungstosilicic, polytungstate electrochromic polymer-modified electrode)
IT 7647-14-5, Sodium chloride, uses
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(cyclic voltammetry of polyoxometalates on ***glassy*** carbon in soln. of)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(polyoxometalate polymer-modified electrode on substrate of)
IT 1343-93-7, Tungstophosphoric acid h3pw12o40 12026-57-2, Molybdophosphoric acid h3pmo12o40 12027-38-2, Tungstosilicic acid h4siw12o40 12299-86-4, Tungstic acid h8w12o40 26222-40-2, Styrene-4-vinylpyridine copolymer 26222-40-2D, 4-Vinylpyridine-styrene copolymer, protonated
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(polytungstate electrochromic polymer-modified electrode)
IT 50926-11-9, Indium tin oxide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(polytungstate electrochromic polymer-modified electrode)

L5 ANSWER 47 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:69228 CAPLUS
DN 118:69228
ED Entered STN: 16 Feb 1993
TI Nature and origin of the 5-eV band in silica-germanium dioxide ***glasses***
AU Hosono, Hideo; Abe, Yoshihiro; Kinser, Donald L.; Weeks, Robert A.; Muta, Kenichi; Kawazoe, Hiroshi
CS Dep. Mater. Sci. Eng., Nagoya Inst. Technol., Gokiso, Japan
SO Physical Review B: Condensed Matter and Materials Physics (1992), 46(18), 11445-51
CODEN: PRBMDO; ISSN: 0163-1829
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 77
AB The sources of an absorption band at .apprx.5 eV obsd. in SiO2:GeO2 and GeO2 ***glasses*** have not been unambiguously identified. Results reported here are consistent with the source of two types of neutral oxygen vacancies. Samples of 95SiO2:5GeO2 and 90SiO2:10GeO2 were prepd. by a chem. vapor deposition soot-remelting method. Optical absorption and ESR spectra were measured. An absorption band centered at 5 eV in as-prepd. SiO2:GeO2 ***glasses*** is composed of two components. One has a peak at 5.06 eV and a FWHM (full width at half max.) of 0.38 eV. Illumination with UV light ***bleached*** this band, and generated Ge E' ***centers*** . A linear relation was found between the decrement in the intensity of the 5.06-eV component and the concns. of UV-induced Ge E' ***centers*** . This relation is a basis for attributing the defect responsible for this component to the precursors of UV-induced Ge E' ***centers*** . The authors propose that the 5.06-eV band is due to neutral oxygen monovacancies (NOVs) coordinated by two Ge ions. The oscillator strength of this band was evaluated to be approx. 0.4 .+-. 0.1 assuming that the NOVs are converted into Ge E' ***centers*** by absorption of UV quanta. The activation energy for this conversion process was of the order of 10-2 eV. The second component of the absorption spectra has a peak at 5.16 eV and a FWHM of 0.48 eV. This band is not ***bleached*** but emits luminescence bands at 3.2 eV (intense) and 4.3 eV (weak) when irradiated with 5-eV light. Based on other research, the authors assign this band to Ge2+ ions coordinated by two oxygens and having two lone pair electrons (neutral oxygen divacancies). The concns. of Ge2+ ions were much larger than those of the NOVs and the ratio of the NOVs to Ge2+ ions increases with increasing GeO2 content. Similarity was found in the characteristics of these two types of oxygen-deficient defects to those in SiO2 ***glasses*** .
ST silicon germanium oxide ***glass*** UV spectra; ***color***

center silicon germanium oxide ***glass*** ; oxygen vacancy
color ***center*** silica germania
IT ***Color*** ***centers***
(in germanium silicate ***glass*** , oxygen vacancies in relation to)
IT Oscillator strength
(of germanium silicate ***glass*** ***color*** ***center***)
IT Ultraviolet and visible spectra
(of germanium silicate ***glass*** , oxygen vacancy in relation to)
IT Ultraviolet radiation
(E' ***center*** in germanium silicate ***glass*** prodn. by, oxygen vacancy in relation to)
IT ***Glass*** , oxide
RL: PRP (Properties)
(germanium silicate, ***color*** ***center*** from oxygen vacancy in UV spectra of)
IT Paramagnetic ***centers***
(E', in germanium silicate ***glass*** , from oxygen vacancy)
IT 7631-86-9, Silicon dioxide, properties
RL: PRP (Properties)
(germania ***glass*** with, ***color*** ***center*** from oxygen vacancy in UV spectra of)
IT 1310-53-8, Germanium dioxide, properties
RL: PRP (Properties)
(silica ***glass*** with, ***color*** ***center*** from oxygen vacancy in UV spectra of)

L5 ANSWER 48 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:47674 CAPLUS
DN 118:47674
ED Entered STN: 03 Feb 1993
TI Spatially resolved UV-vis characterization of radiation-induced ***color*** ***centers*** in poly(styrene) and poly(vinyltoluene)
AU Trimmer, Philip C.; Schlenoff, Joseph B.; Johnson, Kurtis F.
CS Dep. Chem., Florida State Univ., Tallahassee, FL, 32306, USA
SO Radiation Physics and Chemistry (1993), 41(1-2), 57-64
CODEN: RPCHDM; ISSN: 0146-5724
DT Journal
LA English
CC 71-7 (Nuclear Technology)
Section cross-reference(s): 73, 74
AB Polystyrene (PS) and poly(vinyltoluene) (PVT) are in common use as base materials for plastic scintillators. UV-vis spectroscopy was performed on irradiated disks of PS and PVT and the damage and recovery of these disks were monitored over time. By mounting the disks between quartz ***glass*** slides air diffusion was limited to two dimensions, and when the slides were mounted on a micrometer stage assembly, a one dimensional diffusion profile was measured. The absorbances of PS and PVT at certain wavelengths increases for several hours after the irradn. has ended when high dose rates of 6 Mrad/h are used. The visibly sharp annealing boundary that penetrates into the irradiated polymers consistently measured 0.03 in. wide for PS for all wavelengths between 375 and 470 nm therefore the oxygen induced ***bleaching*** of ***color*** ***centers*** proceeds at the same rate for all ***color*** ***centers*** in this wavelength range. A simple self-diffusion model was fit to the boundary velocity data. The self-diffusion coeffs. (D0) were calcd. for PS and PVT:D0(PS) = 1.3 .times. 10-8 cm2/s and D0(PVT) = 1.7 .times. 10-7 cm2/s.
ST polystyrene radiation induced ***color*** ***center*** spectra; UV visible spectra ***color*** ***center*** polymer; polyvinyltoluene radiation induced ***color*** ***center*** spectra; electron damage polymer scintillator
IT Electron beam
(UV-visible characterization of ***color*** ***centers*** in polystyrene and poly(vinyltoluene) irradiated by)
IT ***Color*** ***centers***
(UV-visible spectra in characterization of electron-induced, in polystyrene and poly(vinyltoluene))
IT Ultraviolet and visible spectra
(of ***color*** ***centers*** in electron irradiated polystyrene and poly(vinyltoluene))

IT Radiation counters and detectors
(scintillation, UV-visible characterization of radiation induced ***color*** ***centers*** in polystyrene and poly(vinyltoluene) in relation to)
IT Diffusion
(self-, of oxygen, in polystyrene and poly(vinyltoluene))
IT 9003-53-6, Polystyrene 9017-21-4, Poly(vinyltoluene)
RL: PRP (Properties)
(UV-visible characterization of electron-induced ***color*** ***centers*** in)

L5 ANSWER 49 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:224206 CAPLUS
DN 116:224206
ED Entered STN: 31 May 1992
TI UV laser induced formation of ***color*** ***centers*** in oxygen deficient silica ***glasses***
AU Bagratashvili, V. N.; Rybaltovskii, A. O.; Tsypina, S. I.; Mazavin, S. M.; Amosov, A. V.; Shapovalov, V. N.
CS Sci. Res. Cent. Technol. Lasers, Russia
SO Proceedings of SPIE-The International Society for Optical Engineering (1992), 1723(Laser Microtechnol. Laser Diagn. Surf.), 55-62
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The results obtained on ***decolorization*** of absorption band at 248 nm and formation of E'(Si)- ***centers*** fits well the model in which the O-deficient ***color*** ***center*** of .tplbond. Si-Si .tplbond. vacancy type precedes the photoinduced paramagnetic ***color*** ***center*** (PPCC) of the E'- ***center*** type. In ***glasses*** of different types for one and the same range of .PHI. variations, different dynamics of accumulation of E'- ***centers*** were detected: CE' .varies. .PHI.n, where 0.8 < n < 1.4. In developing of the models of the processes of formation and accumulation of the PPCC of E'- ***center*** type, a real impurity content was taken into account, in particular the presence of metal and chlorine impurities. To explain these processes, besides the mechanism of 2-step ODC (oxygen-deficient ***center***) ionization in the case of .DELTA.CODC .varies. .PHI.2, the mechanism of tunnel-type inner change transfer to impurity catchers for the case of CF' (or .DELTA.CODC) .apprx. .PHI. has been proposed. The account for the processes of the ODC single-quantum tunneling of a charge from ODC and the 2-step ODC excitation also allows to explain the exptl. results on accumulation of E'(Si)- ***centers*** under the exposure to radiation from low-power UV radiation source.
ST UV induced ***color*** ***center*** ***glass*** ; silica ***glass*** ***color*** ***center*** laser induced
IT ***Color*** ***centers***
(UV laser-induced formation of, in oxygen-deficient ***glass***)
IT Laser radiation
(***color*** ***center*** formation by, in oxygen-deficient ***glass***)
IT ***Glass*** , oxide
RL: PRP (Properties)
(oxygen-deficient, UV laser induced ***color*** ***center*** formation in)
IT 60676-86-0
RL: USES (Uses)
(UV laser-induced ***color*** ***center*** formation in)

L5 ANSWER 50 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:161501 CAPLUS
DN 116:161501
ED Entered STN: 17 Apr 1992
TI UV laser excitation-induced defects in silica ***glass*** doped with germanium and cerium
AU Anoikin, E. V.; Dianov, E. M.; Mashinskii, V. M.; Neustruev, V. B.; Guryanov, A. N.; Gusovskii, D. D.; Miroshnichenko, S. I.; Tikhomirov, V. A.; Zverev, Yu. B.
CS Gen. Phys. Inst., Moscow, SU-117942, USSR
SO Proceedings of the International Conference on Lasers (1991), Volume Date

1990 338-45
CODEN: PICLDV; ISSN: 0190-4132
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74, 77
AB Paramagnetic defects and optical absorption bands induced by UV irradn. in the germanosilicate core of the modified chem. vapor deposition optical fiber preform with and without Ce addn. were investigated. The selective laser ionization of Ce3+ ions was carried out to det. the signs of the Ge-related ***color*** ***centers*** . The paramagnetic Ge(1,2) and Ge E'- ***centers*** are formed in pure SiO2-GeO2 ***glass*** but Ge(2)- ***center*** was not obsd. in Ce-doped ***glass*** . Ge(1) and Ge E'- ***centers*** are formed by trapping an electron and Ge(2) by a hole ***center*** . Photobleaching of the .gamma.-induced Ge(1,2)- ***centers*** and optical absorption by the nitrogen laser radiation (photon energy 3.68 eV) was obsd. Correlations between the paramagnetic Ge(n)- ***centers*** and optical absorption bands are established on the basis of their photobleaching behavior. Oscillator strengths are estd. for Ge(n)- ***centers*** . The effect of .gamma.- ***bleaching*** of the 3.68 eV laser light-induced absorption in SiO2-GeO2-Ce ***glass*** was found.
ST germanium cerium silica UV induced defect; oxide silicon germanium cerium radiation defect; electronic spectra germanium cerium silica defect; ESR germanium cerium silica UV defect
IT ***Color*** ***centers***
(Ge, in silica ***glass*** contg. germanium and cerium, UV laser-induced, electronic spectra and ESR of)
IT Electron donors
(of germanium oxygen-deficient ***centers*** , in silica ***glass*** contg. germanium and silicon, ***color*** ***center*** formation using)
IT Electron acceptors
Trapping and Traps
(of germanium, in silica ***glass*** contg. germanium and cerium, ***color*** ***center*** formation by)
IT Paramagnetic ***centers***
(of germanium, in silica ***glass*** contg. germanium and cerium, optical absorption band correlation with)
IT Electron spin resonance
Ultraviolet and visible spectra
(of silica ***glass*** contg. germanium and cerium, following UV laser irradn., ***color*** ***centers*** in relation to)
IT Gamma ray
(photobleaching of germanium ***color*** ***centers*** in silica ***glass*** contg. germanium and cerium by, followed by exposure to UV laser radiation)
IT Laser radiation
(UV, defects in silica ***glass*** contg. germanium and cerium induced by)
IT ***Bleaching***
(photochem., of silica ***glass*** contg. germanium and cerium)
IT ***Color*** ***centers***
(E', in silica ***glass*** contg. germanium and cerium, UV laser-induced, electronic spectra and ESR of)
IT 60676-86-0, Silica, vitreous
RL: PRP (Properties)
(germanium- and silicon-doped, defects in, UV laser-induced, electronic spectra and ESR of)
IT 7440-56-4, Germanium, properties
RL: PRP (Properties)
(radiation defects in silica ***glass*** contg. cerium and, UV laser-induced, electronic spectra and ESR of)
IT 18923-26-7, properties
RL: PRP (Properties)
(radiation defects in silica ***glass*** contg. germanium and, UV laser-induced, electronic spectra and ESR of)
IT 16065-90-0, Cerium, ion(4+), properties
RL: PRP (Properties)
(radiation hardening of germanium-silica ***glass*** using)

L5 ANSWER 51 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:600315 CAPLUS
DN 113:200315
ED Entered STN: 23 Nov 1990
TI The photostimulated reorientation of ***color*** ***centers*** in silicate ***glasses***
AU Glebov, L. B.; Dokuchaev, V. G.; Petrov, M. A.
CS State Opt. Inst., Leningrad, 199034, USSR
SO Journal of Non-Crystalline Solids (1990), 123(1-3), 234-9
CODEN: JNCSBJ; ISSN: 0022-3093
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The effect of optical radiation with photon energy smaller than the energy gap of the ***glass*** on ***color*** ***centers*** in soda silicate ***glasses*** was investigated. There is delocalization of holes from the defects due to light exciting hole ***centers*** . At the initial stages of the light excitation, delocalized holes migrate and are trapped at defects of the same type. The distribution through orientations of anisotropic ***centers*** generated under light irradn. differs from the original distribution of ***color*** ***centers*** in ***glass*** . The process is reorientation of ***color*** ***centers*** . In the final stages of photoexcitation of ***color*** ***centers*** , the migration of holes leads to recombinations with electronic ***color*** ***centers*** and ***bleaching*** .
ST photostimulated reorientation ***color*** ***center*** silicate ***glass***
IT Optical absorption
(by ***color*** ***centers*** in sodium silicate ***glass*** , photostimulated reorientation in relation to)
IT Hole
(migration of delocalized, in photostimulated ***glass***)
IT ***Color*** ***centers***
(photostimulated reorientation of, in silicate ***glass***)
IT Light, chemical and physical effects
(reorientation by, of ***color*** ***centers*** in silicate ***glass***)
IT ***Glass*** , oxide
RL: PRP (Properties)
(sodium silicate, photostimulated reorientation of ***color*** ***centers*** in)

L5 ANSWER 52 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:449594 CAPLUS
DN 113:49594
ED Entered STN: 03 Aug 1990
TI Interaction of gamma ray with some alkali-borate ***glasses*** containing iron
AU El-Din, F. M. Ezz
CS King Abdulaziz Mil. Acad., Riyadh, 11 432, Saudi Arabia
SO Indian Journal of Pure and Applied Physics (1990), 28(5), 251-6
CODEN: IJOPAU; ISSN: 0019-5596
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 57, 73
AB The change of optical absorption of some irradiated alkali borate ***glasses*** contg. iron was studied by varying gamma-ray dose or the alkali oxide content. To sep. the absorption due to Fe from the intrinsic absorption, blank ***glasses*** were prepd. and measured. The results showed that the induced absorption spectra exhibited changes with the radiation dose and chem. compn. of the ***glass*** . A resoln. of the obsd. absorption spectra show that 3 bands are induced with their max. at locations as follows: first split-band with peaks at 350-380 nm, second split-band with max. at 400-420 nm and third band at 580 nm. The response of the ***glasses*** to gamma-ray irradn. is related to the formation of defects and hence the ***color*** ***centers*** , to the approach of satn. after a certain gamma dose, and also to the possible photochem. effect of the transition metal in the ***glass*** . The

decay in band intensity which is noticed by thermal ***bleaching*** was also studied.
ST gamma ray alkali borate ***glass*** iron; ***color*** ***center*** borate ***glass*** iron
IT ***Glass*** , oxide
RL: USES (Uses)
(alkali-borate contg. iron, effect of gamma ray on optical properties of)
IT ***Color*** ***centers***
(in gamma-irradiated alkali-borate ***glasses*** contg. iron)
IT Ultraviolet and visible spectra
(of gamma-irradiated alkali-borate ***glasses*** contg. iron)
IT Gamma ray, chemical and physical effects
(on alkali-borate ***glasses*** contg. iron)
IT Radiolysis
(radiation defects in alkali-borate ***glasses*** contg. iron in relation to)
IT 12057-24-8, Lithium oxide, properties
RL: PRP (Properties)
(alkali-borate ***glasses*** contg. iron and, effect of gamma ray on optical properties of)
IT 1309-37-1, Iron oxide (Fe2O3), uses and miscellaneous
RL: USES (Uses)
(alkali-borate ***glasses*** contg., effect of gamma ray on optical properties of)

L5 ANSWER 53 OF 124 CAPLUS
AN 1990:207581 CAPLUS
DN 112:207581
ED Entered STN: 26 May 1990
TI Optical ***bleaching*** in photochromic films of silver chloride-copper chloride
AU Yunakova, O. N.; Miloslavskii, V. K.; Ageev, L. A.
CS Khar'k. Gos. Univ., Kharkov, USSR
SO Zhurnal Nauchnoi i Prikladnoi Fotografii i Kinematografii (1990), 35(1), 3-8
CODEN: ZNPFAG; ISSN: 0044-4561
DT Journal
LA Russian
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB ***Color*** ***center*** spectra in 2 layer AgCl-CuCl films were measured at different stages of optical ***bleaching*** induced by polarized laser radiation. A strong dependence was obsd. at induced dichroism and polarization absorption spectra of the films on laser radiation wavelength. At the initial stages of ***bleaching*** anisotropic structures (as Ag chains and granules) were formed which led to longitudinal (irradn. wavelength .lambda.0 = 441.6) and transverse (.lambda.0 = 632.8 nm) Weigert effect. At the later stages Ag chains were converted into photoinduced periodic structures, formation of which was accompanied by formation of polarized, spectral holes in the spectral region of photoinduced colloidal Ag band. A significant difference was demonstrated between induced dichroism spectrum in AgCl-CuCl film and the same spectrum in photochromic Ag halide ***glasses*** .
ST silver chloride copper chloride film photodecoloration; optical ***bleaching*** silver copper chloride film; photoinduced dichroism silver copper chloride film; ***color*** ***center*** silver copper chloride film; Weigert effect silver copper chloride film; spectral hole silver copper chloride film; photochromic material silver copper chloride film
IT Laser radiation, chemical and physical effects
(hole burning, in optical ***bleaching*** in silver chloride-copper chloride films)
IT ***Color*** ***centers***
(in photochromic silver chloride-copper chloride films, optical ***bleaching*** of)
IT Photoimaging compositions and processes
(silver chloride-copper chloride films for, optical ***bleaching*** in)
IT Photochromic substances
(silver chloride-copper chloride films, optical ***bleaching*** in)

IT Dichroism
(photoinduced, in silver chloride-copper chloride films)
IT Ultraviolet and visible spectra
(polarized, of silver chloride-copper chloride films, photobleaching in)
IT 7440-22-4P, Silver, preparation
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in photoinduced ***bleaching*** in photosensitive films of silver chloride-copper chloride)
IT 7758-89-6, Copper monochloride
RL: USES (Uses)
(photochromic films from silver chloride and, optical ***bleaching*** in)
IT 7783-90-6, Silver chloride, properties
RL: PRP (Properties)
(photochromic films of copper chloride and, optical ***bleaching*** in)

L5 ANSWER 54 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:61634 CAPLUS
DN 112:61634
ED Entered STN: 17 Feb 1990
TI Method for the conditioning of dewatered, washed, acid-treated, activated fuller's earth suspensions
IN Moerl, Lothar; Kuenne, Hans Joachim; Krell, Lothar; Schmidt, Joerg; Transfeld, Peter; Bruening, Hans Juergen; Sohst, Enno; Blume, Herbert; Adler, Joachim; Luft, Werner
PA VEB Kombinat Oel und Margarine, Ger. Dem. Rep.
SO Ger. (East), 8 pp.
CODEN: GEXXA8
DT Patent
LA German
IC ICM C01B033-30
CC 57-5 (Ceramics)
Section cross-reference(s): 17, 51
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DD 269840	A1	19890712	DD 1987-311915	19871231
	FR 2648726	A1	19901228	FR 1989-8371	19890623
PRAI	DD 1987-311915		19871231		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DD 269840	ICM	C01B033-30
	IPCI	C01B0033-30 [ICM,4]
FR 2648726	IPCI	B01J0020-12 [ICM,5]; A23L0001-27 [ICS,5]; A23D0007-00 [ICS,5]; A23D0009-00 [ICS,5]

AB In the title process, the activated fuller's earth, having water content 1.2-3.3 kg/kg dry material, is simultaneously dried and .gtoreq.95% (based on conditioned dry material) comminuted to diam. <90 .mu.m in a fluidized bed of inert particles having av. diam. 1.5-5 mm. Linear velocity of the drying gas decreases from 42-53 m/s at the entry of the fluidized bed to 0.4-1.1 m/s at the exit, and the ratio of the inert particles, based on the conditioned activated fuller's earth having water content 0.0527 kg/kg dry material, is 0.85-2.1 kg-h/kg at 80-135.degree.. This single-step process results in shorter drying time and improved quality of the fuller's earth, which is useful as absorbent for ***color*** ***centers*** in edible fats and oils and for purifn. of oil products in the chem. industry. Thus, 43.2 kg/h activated fuller's earth (water content 2.39 kg/kg dry material) was fed into a conical fluidized bed consisting of 12 kg ***glass*** spheres having diam. 2.3 mm and dried with air at 252.degree.. The flow rate of air at the inlet and outlet of the fluidized bed was 48.1 and 0.44 m/s, resp. The dried material had particle size >90 .mu.m <2%, 5-10 .mu.m .apprx.40%, <5 .mu.m <15%, ***bleaching*** activity 94%, and contained 0.01% free HCl and 0.15% bonded HCl, vs. 30, 30, 30, 87, 0.05, and 0.4%, resp., for the conventional process.
ST activated fuller earth conditioning; drying activation fuller earth adsorbent; fluidized bed drying activation fuller earth; fat oil purifn activated fuller earth
IT Fuller's earth

RL: USES (Uses)
(activated, conditioning of, by drying and size redn. in fluidized bed)

IT Fuller's earth
RL: USES (Uses)
(activated, drying and size redn. of, in fluidized bed contg. inert particles, for adsorbents)

IT Size reduction
(drying and, conditioning of activated fuller's earth by, in fluidized bed contg. inert particles, for adsorbents)

IT Fluidized beds and systems
(fuller's earth drying and size redn. in, for adsorbents)

IT Fats, preparation
Hydrocarbon oils
Oils, glyceridic
RL: PUR (Purification or recovery); PREP (Preparation)
(purifn. of, fuller's earth activation for)

IT Drying
(fluidized-bed, size redn. and, conditioning of activated fuller's earth by, for adsorbents)

IT ***Glass*** , oxide
RL: USES (Uses)
(spheres, fluidized beds contg., conditioning of activated fuller's earth by drying and size redn. in)

L5 ANSWER 55 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1989:539053 CAPLUS

DN 111:139053

ED Entered STN: 14 Oct 1989

TI DTA studies of thermochromism and thermal ***bleaching*** in reduced phosphate ***glasses***

AU Kawashima, Kouichi; Ding, Jinzhu; Hosono, Hideo; Abe, Yoshihiro

CS Dep. Mater. Sci. Eng., Nagoya Inst. Technol., Nagoya, 466, Japan

SO Nippon Seramikkusu Kyokai Gakujutsu Ronbunshi (1989), 97(8), 823-7
CODEN: NSKRE2; ISSN: 0914-5400

DT Journal

LA Japanese

CC 57-1 (Ceramics)

AB Thermally induced coloring and ***bleaching*** in reduced Ca phosphate, Al Ca phosphate, and Al K borophosphate ***glasses*** were investigated by means of DTA. As-quenched ***glasses*** prepd. under reducing conditions were transparent and colorless. On reheating at around the softening temp. of the ***glasses*** , they turned red (striking). The struck ***glasses*** became almost transparent and colorless (***bleaching***) when they were heated at >580.degree. and quenched subsequently. The resultant ***glasses*** (PTC-RP ***glass***) exhibited red coloring after reheating at >200.degree. and/or light irradn. In terms of transformation of colloidal P in the PTC-RP ***glasses*** , the endotherms at .apprx.60 and 580.degree. in the DTA curves are due to melting of white and red P, resp., and the exotherm at .apprx.270.degree. is due to transformation of liq. P to amorphous red P, i.e., to ring-opening polymn. of P mols.

ST striking reduced phosphate ***glass*** ; thermal coloring reduced phosphate ***glass*** ; ***bleaching*** reduced phosphate ***glass*** ; phosphate ***glass*** thermal coloring ***bleaching***

IT ***Color*** ***centers***
(formation of, in reduced phosphate ***glass***)

IT ***Glass*** , oxide
RL: USES (Uses)
(calcium aluminophosphate, reduced, ***color*** striking and thermal ***bleaching*** in)

IT ***Glass*** , oxide
RL: USES (Uses)
(calcium phosphate, reduced, ***color*** striking and thermal ***bleaching*** in)

IT ***Glass*** , oxide
RL: USES (Uses)
(potassium aluminoborophosphate, reduced, ***color*** striking and thermal ***bleaching*** in)

L5 ANSWER 56 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1989:462547 CAPLUS

DN 111:62547
ED Entered STN: 20 Aug 1989
TI Structure and stability of defect ***centers*** induced in silicate ***glasses*** by irradiation
AU Maekawa, Takashi; Murai, Nobuhiro; Haino, Kazuyoshi; Yokokawa, Toshio
CS Fac. Sci., Hokkaido Univ., Sapporo, 060, Japan
SO Nippon Seramikkusu Kyokai Gakujutsu Ronbunshi (1989), 97(3), 385-91
CODEN: NSKRE2; ISSN: 0914-5400
DT Journal
LA Japanese
CC 57-1 (Ceramics)
Section cross-reference(s): 73
AB X-ray irradn. was applied to mixed alkali silicate and Na borosilicate ***glasses*** . In the former ***glasses*** , the energy of visible absorption due to nonbridging O hole ***centers*** decreased with increasing av. ***glass*** basicity. This is related to weakening of the Si-O bonding with the presence of the alkali metal cations. In the Na borosilicate ***glasses*** , the induced absorption due to Si-O-Na linkage appeared only in the concn. range [Na2O]/[B2O3] >1; thus, the peculiarity of the microstructure of Na borosilicate ***glass*** , such as phase sepn., was also reflected in the irradn. phenomena. From the thermal ***bleaching*** of the irradiated ***glasses*** , the relative stability of the defect ***centers*** could be differentiated.
ST defect structure stability ***glass*** irradn
IT ***Glass*** structure
(alkali metal silicate and sodium borosilicate, x-ray irradn. effect on)
IT ***Color*** ***centers***
(stability of, in borosilicate and silicate ***glass*** , x-ray irradn. effect on)
IT ***Glass*** , oxide
RL: PROC (Process)
(alkali metal silicate, x-ray irradn. of, ***color*** ***center*** stability in relation to)
IT ***Glass*** , oxide
RL: PROC (Process)
(sodium borosilicate, x-ray irradn. of, ***color*** ***center*** stability in relation to)

L5 ANSWER 57 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:607878 CAPLUS
DN 107:207878
ED Entered STN: 27 Nov 1987
TI Structure of absorption spectra of high-purity .gamma.-colored sodium silicate ***glasses*** in the UV region
AU Glebov, L. B.; Dokuchaev, V. G.; Petrov, M. A.; Petrovskii, G. T.
CS USSR
SO Fizika i Khimiya Stekla (1987), 13(3), 415-18
CODEN: FKSTD5; ISSN: 0132-6651
DT Journal
LA Russian
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 74
AB UV absorption spectra at 5.0-5.8 eV of high-purity Na silicate (22Na2O.3CaO.75SiO2) ***glasses*** exposed to .gamma.-rays consisted of 2 bands with the max. at 5.3 and 5.8 eV and with the halfwidths of 1.0 and 0.8 eV, resp. The latter band could not be ***bleached*** with the UV radiation which effectively ***bleached*** the former band. The finding confirms the earlier interpretation (Cohen, A.J., and Janezic, G.G., 1983) of the band at 5.8 eV in terms of a new type of an intrinsic ***color*** ***center*** .
ST UV ***color*** ***center*** silicate ***glass***
IT Gamma ray, chemical and physical effects
(***color*** ***centers*** induced by, in sodium silicate ***glasses***)
IT ***Color*** ***centers***
(in sodium silicate ***glasses*** , UV spectra of)
IT ***Glass*** , oxide
RL: PRP (Properties)
(sodium silicate, UV spectra of ***color*** ***centers*** in

.gamma.-irradiated)

L5 ANSWER 58 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:586148 CAPLUS
DN 107:186148
ED Entered STN: 14 Nov 1987
TI Multistage kinetics of the thermal ***bleaching*** of radiation ***color*** ***centers*** in phosphate ***glasses***
AU Baidakova, O. L.; Dmitryuk, A. V.; Petrovskii, G. T.; Yashchurzhinskaya, O. A.
CS USSR
SO Khimicheskaya Fizika (1987), 6(6), 782-8
CODEN: KHFID9; ISSN: 0207-401X
DT Journal
LA Russian
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 75
AB The nonexponential kinetics of thermal ***bleaching*** of radiation ***color*** ***centers*** in Na Ca aluminophosphate ***glass*** is characteristic for 1 type of ***centers*** , namely PO42-. The obsd. multistage kinetics of degrdn. of PO42- is satisfactorily explained by the theory of polychromatic recombination reactions, which assumes the presence of a wide distribution of the reactivity of the ***centers*** .
ST kinetics ***bleaching*** ***color*** ***center*** ***glass*** ; phosphate ***glass*** ***color*** ***center*** ***bleaching*** ; aluminophosphate ***glass*** ***color*** ***center*** ***bleaching*** ; calcium sodium aluminophosphate ***glass*** ***bleaching***
IT ***Color*** ***centers***
(in aluminophosphate ***glass*** , thermal ***bleaching*** of, kinetics of)
IT ***Glass*** , oxide
RL: PRP (Properties)
(calcium sodium aluminophosphate, thermal ***bleaching*** of ***color*** ***centers*** in, kinetics of)

L5 ANSWER 59 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:110316 CAPLUS
DN 106:110316
ED Entered STN: 05 Apr 1987
TI Optical properties of some lithium oxide-boron oxide-tungsten oxide-transition metal [[(Li2O).(B2O3)2]1-x(WO3)x]1-yMyO ***glasses***
AU Froebel, P.; Baerner, K.
CS Phys. Inst. Fachber. Phys., Univ. Goettingen, Goettingen, Fed. Rep. Ger.
SO Journal of Non-Crystalline Solids (1986), 88(2-3), 329-44
CODEN: JNCSBJ; ISSN: 0022-3093
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57
AB A blue ***color*** ***center*** appears in [(LiO2).(B2O3)2]1-x[WO3]x ***glasses*** for x .gtoreq.0.4. Details of the prepn. for the occurrence of this ***center*** , such as the WO3 starting material, the temp. of the melt, the reaction time, and the influence of transition metals (MO), were systematically investigated, and the transmittance and its wavelength deriv. of typical samples are presented as a function of quantum energy. A strong enhancement of the blue coloration by .gtoreq.200 ppm Co was obsd. while small amts. of Cu ***bleach*** the material. Larger complexes HxWnO3n-m already exist in the starting materials and persist for some time in the melt; Co apparently stabilizes these complexes.
ST lithium borate tungstate metal ***glass***
IT ***Color*** ***centers***
Optical absorption
Optical property
Optical reflection
(of transition metal-doped lithium borate tungstate ***glasses***)
IT Transition metals, properties
RL: PRP (Properties)

(optical properties of lithium borate tungstate ***glasses*** contg.)
IT 1314-35-8, Tungsten trioxide, properties 12007-60-2, Lithium borate (Li2B4O7)
RL: PRP (Properties)
(optical properties of ***glasses*** contg.)
IT 7439-89-6, Iron, properties 7439-96-5, Manganese, properties 7440-02-0, Nickel, properties 7440-47-3, Chromium, properties 7440-48-4, Cobalt, properties 7440-50-8, Copper, properties 11105-11-6, Tungsten hydroxide oxide
RL: PRP (Properties)
(optical properties of lithium borate tungstate ***glasses*** contg.)

L5 ANSWER 60 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:193641 CAPLUS
DN 104:193641
ED Entered STN: 01 Jun 1986
TI Optical and thermal ***bleaching*** of x-irradiated barium aluminoborate ***glasses***
AU Pontuschka, W. M.; Isotani, S.; Piccini, A.
CS Inst. Fis., Univ. Sao Paulo, Sao Paulo, Brazil
SO Report (1985), IFUSP-P-512, 44 pp. Avail.: INIS
From: INIS Atomindex 1985, 16(23), Abstr. No. 16:078969
DT Report
LA English
CC 65-7 (General Physical Chemistry)
Section cross-reference(s): 57, 73, 77
AB B electron ***centers*** (BEC), B-O hole ***centers*** (BOHC) and interstitial at. H ***centers*** in aluminoborate ***glasses*** x-irradiated at 77 K were studied by using ESR. Protons are also present.
ST point defect aluminoborate ***glass*** ; x irradn aluminoborate ***glass*** ***bleaching***
IT ***Glass*** , oxide
RL: PRP (Properties)
(barium aluminoborate, optical and thermal ***bleaching*** of x-irradiated, point defects in relation to)
IT ***Color*** ***centers***
(***bleaching*** of, in x-irradiated barium aluminoborate ***glasses***)
IT X-ray, chemical and physical effects
(on optical and thermal ***bleaching*** of barium aluminoborate ***glasses*** , point defects in relation to)

L5 ANSWER 61 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:158543 CAPLUS
DN 104:158543
ED Entered STN: 03 May 1986
TI Optical studies of biaxial aluminum-related ***color*** ***centers*** in smoky quartz
AU Partlow, Deborah P.; Cohen, Alvin J.
CS Dep. Geol. Planet. Sci., Univ. Pittsburgh, Pittsburgh, PA, 15260, USA
SO American Mineralogist (1986), 71(3-4), 589-98
CODEN: AMMIAY; ISSN: 0003-004X
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Three optical absorption bands, A1, A2, and A3, are assocd. with trapped hole ***centers*** that develop when quartz contg. Al3+ in a substitutional Si4+ site is subjected to ionizing radiation. Studies of the directional anisotropy of the A2 and A3 optical bands in the quartz basal plane show that they may interchange orientations from crystal to crystal in major rhombohedral growth; this contradicts an earlier theory that the anisotropy results from site selectivity of Al3+ occurring only in minor rhombohedral growth. Four crystallog. directions were found for the max. intensity of A2 and/or A3: [0.hivin.110], [.hivin.1.hivin.340], [.hivin.1.hivin.120], and [.hivin.1.hivin.450]. The removal of basal-plane anisotropy at .apprx.500.degree. reported by others was confirmed and is attributed to the homogenization of interstitial atoms providing charge compensation for substitutional Al3+. Thermal ***bleaching*** studies were conducted to investigate the relations

among the A bands and to observe their assocn. with the B band, which is related to a trapped-electron ***center*** . A plot of the Nf (product of no. of absorbing ***centers*** times oscillator strength) for the A2 band vs. the B band with ***bleaching*** temp. forms a straight line with a slope .apprx.1.0, which is identical to a comparable plot of the growth of the analogous H2+ and E3- bands studied earlier in soda silica ***glass*** .

ST optical absorption ***color*** ***center*** smoky quartz

IT Optical absorption
(of aluminum-related ***color*** ***centers*** in smoky quartz)

IT Optical anisotropy
(of biaxial aluminum-related ***color*** ***centers*** in .gamma.-radiated smoky quartz)

IT ***Color*** ***centers***
(optical properties of biaxial aluminum-related, in irradiated smoky quartz)

IT Gamma ray, chemical and physical effects
(optical properties of ***color*** ***centers*** in smoky quartz irradiated by)

IT 14808-60-7, properties
RL: PRP (Properties)
(optical properties of aluminum-related ***color*** ***centers*** in .gamma.-irradiated)

IT 7429-90-5, properties
RL: PRP (Properties)
(optical properties of biaxial ***color*** ***centers*** related to, in .gamma.-irradiated smoky quartz)

L5 ANSWER 62 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1986:42316 CAPLUS

DN 104:42316

ED Entered STN: 08 Feb 1986

TI Radiation effects in fluoride ***glasses***

AU Tanimura, K.; Sibley, W. A.; Suscavage, M.; Drexhage, M.

CS Dep. Phys., Oklahoma State Univ., Stillwater, OK, 74078, USA

SO Journal of Applied Physics (1985), 58(12), 4544-52
CODEN: JAPIAU; ISSN: 0021-8979

DT Journal

LA English

CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 77

AB Radiation-induced defects in Zr-based fluoride ***glasses*** were characterized using optical absorption and ESR techniques. The optical absorption bands due to interstitial F atoms, the F2-, FCl-, Cl2- ***centers*** , and Zr3+ ***centers*** were identified by correlating optical absorption and ESR measurements. Polarized ***bleaching*** expts. indicate that the hole-type ***centers*** and the Zr3+ ***centers*** have anisotropic defect configurations. X-ray excitation at 14 K generates a broad, asym. emission band at 337 nm (3.68 eV), which is assigned to a localized-excited state similar to that for self-trapped excitons in halide crystals. The intensity of the x-ray induced emission provides further evidence that radiolysis defect prodn. occurs in this material. The optical tail of the radiation-induced Zr3+ absorption affects IR transmission. Evidence is presented that the CCl4 reactive-atm. process introduces a significant amt. of Cl- (.apprx.5%) in the ***glass*** .

ST radiation defect zirconium fluoride ***glass*** ; electron defect zirconium fluoride ***glass***

IT Electron beam, chemical and physical effects
(defects induced by, in zirconium fluoride-based ***glass***)

IT ***Color*** ***centers***
(electron irradn.-induced, in zirconium fluoride-based ***glass***)

IT Electron spin resonance
Optical absorption
Ultraviolet and visible spectra
(of zirconium fluoride-based ***glass*** , electron radiation induced defects in relation to)

IT ***Glass*** , nonoxide
RL: PRP (Properties)
(zirconium fluoride-based, electron irradn. induced defects in)

IT 7783-64-4 7784-18-1 7787-32-8 13709-38-1

RL: PRP (Properties)
(radiation-induced defects in fluoride ***glass*** contg.)

L5 ANSWER 63 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1985:599903 CAPLUS
DN 103:199903
ED Entered STN: 14 Dec 1985
TI Thermally generated darkening of oxide ***glasses***
AU Sen, A.; Kumar, J.; Chakravorty, D.
CS Mater. Sci. Programme, Indian Inst. Technol., Kanpur, 208016, India
SO Physics and Chemistry of Glasses (1985), 26(5), 171-6
CODEN: PCGLA6; ISSN: 0031-9090
DT Journal
LA English
CC 57-1 (Ceramics)
AB Oxide ***glass*** powders of a wide range of compns. darken when heated at 400-600.degree. with a trace amt. of water, but the darkening is inhibited when excess water is present. The behavior is not dependent on the atm. in which the heat treatment is carried out. The darkened samples ***bleach*** when heated to 850.degree. in an ordinary atm. or when treated with oxidizing agents. Transmission electron microscopic studies do not reveal any pptd. cryst. phase within the darkened ***glass*** matrix nor does the matrix give any specific ESR signal. A model is proposed which attributes the darkening to the formation of nonparamagnetic ***color*** ***centers*** which are formed by simultaneous dehydration and redn. reactions in which the trace amt. of water acts as a catalyst.
ST darkening oxide ***glass*** water heating
IT ***Glass*** , oxide
RL: USES (Uses)
(darkening of, thermally-generated, water effect in)
IT ***Color*** ***centers***
(nonparamagnetic, formation of, in oxide ***glass*** powders, thermally generated darkening from)
IT Process simulation, physicochemical
(of darkening of oxide ***glass*** powders, on heating with trace water content)
IT Firing, heat-treating process
(of oxide ***glass*** powders, darkening from, water effect in)
IT 7732-18-5, uses and miscellaneous
RL: USES (Uses)
(in thermally-generated darkening of oxide ***glass***)

L5 ANSWER 64 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1985:550446 CAPLUS
DN 103:150446
ED Entered STN: 01 Nov 1985
TI Photothermal-lensing measurements of two-photon absorption and two-photon-induced ***color*** ***centers*** in borosilicate ***glasses*** at 532 nm
AU White, W. T., III; Henesian, M. A.; Weber, M. J.
CS Lawrence Livermore Natl. Lab., Univ. California, Livermore, CA, 94550, USA
SO Journal of the Optical Society of America B: Optical Physics (1985), 2(9), 1402-8
CODEN: JOBPDE; ISSN: 0740-3224
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB By using photothermal lensing, 2-photon absorption coeffs. were measured and laser-induced solarization was obsd. at 532 nm in the transparent borosilicate ***glasses*** BK-3, BK-7, and BK-10. The 2-photon absorption coeffs. at 532 nm are 0.6, 2.9, and 0.4 cm/TW for BK-3, BK-7, and BK-10, resp. This is .apprx.2 orders of magnitude smaller than the 2-photon absorption coeffs. of cryst. materials of comparable energy band-gap. The results in BK-7 indicate that a 2-photon process initiates the solarization and that 1-photon ***bleaching*** limits it. The max. induced absorption at 532 nm in BK-7 is .apprx.0.07 cm-1 per GW/cm2.
ST photothermal lensing borosilicate ***glass*** ; laser induced solarization borosilicate ***glass*** ; two photon absorption borosilicate ***glass***
IT Laser radiation

(absorption coeffs. for two photons of, in borosilicate ***glass***
)
IT Photon
(absorption coeffs. for two, by borosilicate ***glass***)
IT ***Glass*** , oxide
RL: PRP (Properties)
(borosilicate, two-photon absorption coeffs. in laser-induced
solarization of)
IT ***Color*** ***centers***
(in borosilicate ***glass*** , two-photon-induced)
IT Laser radiation, chemical and physical effects
(solarization by, of transparent borosilicate ***glass***)

L5 ANSWER 65 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1984:218255 CAPLUS
DN 100:218255
ED Entered STN: 23 Jun 1984
TI Mechanisms of post-radiation transformations in alkali phosphate
glasses activated by copper
AU Vil'chinskaya, N. N.; Dmitryuk, A. V.; Ignat'ev, E. G.; Karapetyan, G. O.;
Petrovskii, G. T.
CS Gos. Opt. Inst., Leningrad, USSR
SO Doklady Akademii Nauk SSSR (1984), 274(5), 1117-19 [Phys. Chem.]
CODEN: DANKAS; ISSN: 0002-3264
DT Journal
LA Russian
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 75, 77
AB Radiation ***color*** ***centers*** in phosphate ***glasses***
can not be described by the model of 1 type of ***center*** . The
conclusion is the result of the observation of the effect of selective
decolorization of radiation ***color*** ***centers***
during the introduction of Cu+ ions in the ***glasses*** . Li
aluminophosphate ***glasses*** , activated by 0-0.13% Cu+ ions, were
studied by optical absorption and ESR spectra, after irradn. by
.gamma.-rays.
ST ***color*** ***center*** phosphate ***glass*** copper; ESR
phosphate ***glass*** copper irradiated; optical spectra phosphate
glass copper
IT ***Glass*** , oxide
RL: PRP (Properties)
(aluminum lithium phosphate contg. copper, radiational ***color***
centers in)
IT Gamma ray, chemical and physical effects
(***color*** ***centers*** from, in aluminum lithium phosphate
glass contg. copper)
IT Electron spin resonance
Ultraviolet and visible spectra
(of radiational ***color*** ***centers*** in aluminum lithium
phosphate ***glass*** contg. copper)
IT 7440-50-8, properties
RL: PRP (Properties)
(aluminum lithium phosphate ***glasses*** contg., radiational
color ***centers*** in, optical and ESR spectra of)
IT 32554-05-5
RL: PRP (Properties)
(copper-doped ***glass*** of, radiational ***color***
centers in, optical absorption and ESR spectra of)

L5 ANSWER 66 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1984:164992 CAPLUS
DN 100:164992
ED Entered STN: 12 May 1984
TI Lasing of a spoke-shaped neodymium- ***glass*** laser
AU Dzhibladze, M. I.; Lazarev, L. E.; Mshvelidze, G. G.
CS Tbilis. Gos. Univ., Tbilisi, USSR
SO Kvantovaya Elektronika (Moscow) (1984), 11(1), 137-41
CODEN: KVEKA3; ISSN: 0368-7147
DT Journal
LA Russian
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)
AB Results are presented of studies of the kinetics of the stimulated emission from Nd lasers utilizing silicate ***glasses*** and produced in the form of thin spoke-shaped rods .apprx.1 mm in diam. and 30-40 cm in length. A similarity was found between these lasers and fiber lasers. Regular giant pulses were obsd. in the radiation which appear due to ***bleaching*** of short-lived ***color*** ***centers*** . Quasi-continuous-wave operation with relaxational vibrations and self-mode-locking behavior with an ultrashort pulse train were also obtained.
ST neodymium ***glass*** laser spoke shaped
IT Lasers
(neodymium- ***glass*** , spoke-shaped)

L5 ANSWER 67 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1984:143732 CAPLUS
DN 100:143732
ED Entered STN: 12 May 1984
TI Effect of photodecolorization on two-photon coloring of sodium silicate ***glasses***
AU Glebov, L. B.; Efimov, O. M.; Petrovskii, G. T.; Rogovtsev, P. N.
CS Gos. Opt. Inst. im. Vavilova, Leningrad, USSR
SO Fizika i Khimiya Stekla (1984), 10(1), 66-9
CODEN: FKSTD5; ISSN: 0132-6651
DT Journal
LA Russian
CC 57-1 (Ceramics)
AB The effect of optical ***decolorization*** by the 3rd and 4th harmonics (355 and 266 nm) of a pulsed Nd laser on the 2-photon coloring of Na Ca silicate ***glasses*** subjected to .gamma.-irradn. at 2 .times. 107 R was studied. The addnl. absorption of the ***glass*** under high-intensity optical excitation was detd. by the dynamic equil. between 2-photon ionization and 1-photon ***decolorization*** of ***color*** ***centers*** . This phenomenon can be used to det. the distribution of power d. on high-intensity light fluxes.
ST ***glass*** ***color*** ***center*** laser ***decolorization***
IT ***Glass*** , oxide
RL: USES (Uses)
(calcium sodium silicate, coloring and ***decolorization*** of)
IT ***Color*** ***centers***
(in ***glass*** , calcium sodium silicate, ***decolorization*** of, by laser radiation)
IT Laser radiation, chemical and physical effects
(of ***glass*** , calcium sodium silicate, two-photon ionization and one-photon ***decolorization*** by)

L5 ANSWER 68 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:599443 CAPLUS
DN 99:199443
ED Entered STN: 12 May 1984
TI Study of thermal ***bleaching*** of ***color*** ***centers*** induced in irradiated alkali aluminoborate ***glasses***
AU Hussein, A. L.; Moustaffa, F. A.; El-Bialy, A.; Salem, L. R.; Gomma, I.
CS Glass Res. Lab., Cairo, Egypt
SO Sprechsaal (1983), 116(8), 666-9
CODEN: SPREAS; ISSN: 0341-0439
DT Journal
LA English
CC 57-1 (Ceramics)
AB The fading curves of Ce-contg. alkali aluminoborate ***glasses*** , irradiated to different doses of .gamma.-radiation, were studied at different temps. The optical absorption band at .apprx.2.48 or 2.23-2.35 eV for Li2O- or soda- ***glasses*** , resp. was relatively unstable and its intensity decreased with increasing temp. until it reached satn. after .apprx.200.degree.. This can be attributed to the presence of intrinsic defects in the ***glass*** such as vacancies, interstitial atoms, and nonbridging O in the ***glass*** structure. Thus, the radiation-induced absorption in ***glass*** can be used to detect various structural changes in the ***glasses*** and such ***glasses*** can be used as dosimeters.
ST optical absorption ***glass*** irradn; thermal ***bleaching***

glass irradiated
IT ***Glass*** , oxide
RL: USES (Uses)
(aluminoborate, thermal ***bleaching*** of irradn.-induced ***color*** ***centers*** in, cerium oxide effect on)
IT ***Color*** ***centers***
(irradn.-induced, in ***glass*** , thermal ***bleaching*** of)
IT Optical absorption
(of aluminoborate ***glasses*** contg. irradn.-induced ***color*** ***centers*** , temp. in relation to)
IT 1306-38-3, uses and miscellaneous
RL: USES (Uses)
(***glass*** , aluminoborate, thermal ***bleaching*** of irradn.-induced ***color*** ***centers*** in)

L5 ANSWER 69 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:413240 CAPLUS
DN 99:13240
ED Entered STN: 12 May 1984
TI Photobleaching of radiation-induced ***color*** ***centers*** in a germania-doped ***glass*** fiber
AU Gilbert, R. M.
CS Harry Diamond Lab., Adelphi, MD, 20783, USA
SO IEEE Transactions on Nuclear Science (1982), NS-29(6), 1484-8
CODEN: IETNAE; ISSN: 0018-9499
DT Journal
LA English
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Expts. were performed to measure the effects of photobleaching on radiation-induced absorption in a Corning germania-doped graded-index fiber (type 1506) held at 77 K. Fiber segments 4.6 m long were exposed to radiation pulses of approx. 280 rads(Si) and 24-ns pulsewidth while suspended in a liq. N bath. Wavelength-dependent absorption measurements and photobleaching were also carried out on the fiber in situ. The measurements showed a broad radiation-induced absorption band peaking between 5000 and 6000 .ANG.. It was partially photobleached with light in the wavelength range of 6556-9556 .ANG., and was almost entirely photobleached with light at 4556 and 5556 .ANG. wavelengths. This absorption band was readily removed with a room-temp. thermal anneal and was thus identified as the source of transient darkening in germania-doped fibers irradiated at higher temps.
ST photobleaching ***glass*** fiber ***color*** ***center*** ; laser ***bleaching*** ***color*** ***center*** ***glass***
IT Bremsstrahlung
(***color*** ***centers*** induced by, in germania-doped ***glass*** fibers, photobleaching of)
IT Fiber optics
(germania-doped graded-index fibers for, radiation-induced ***color*** ***centers*** in, photobleaching of)
IT Laser radiation, chemical and physical effects
(photobleaching by, of radiation-induced ***color*** ***centers*** in germania-doped ***glass*** fibers)
IT ***Color*** ***centers***
(radiation-induced, in germania-doped ***glass*** fibers, photobleaching of)
IT 1310-53-8, properties
RL: PRP (Properties)
(optical fiber waveguides contg., photobleaching of radiation-induced ***color*** ***centers*** in)

L5 ANSWER 70 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:162605 CAPLUS
DN 98:162605
ED Entered STN: 12 May 1984
TI Photoactive coating for hardening optical fibers
IN Caldwell, Robert S.
PA United States Dept. of the Air Force, USA
SO U. S. Pat. Appl., 16 pp. Avail. NTIS Order No. PAT-APPL-6-403 215
CODEN: XAXXAV
DT Patent
LA English

CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 38, 57
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 403215	A0	19830304	US 1982-403215	19820729
	US 4626068	A	19861202		
PRAI	US 1982-403215		19820729		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 403215	NCL	385/128.000; 250/458.100; 250/483.100; 252/301.400R; 252/301.600R; 252/600.000; 385/141.000; 427/157.000

AB An improved optical fiber structure which is hardened against the effects of ionizing nuclear radiation comprises a conventional plastic, ***glass*** , or SiO2 optical fiber core and cladding, and an outer coating comprising phosphorescent or luminescent material to optically ***bleach*** optical absorption sites generated in the fiber core by the radiation.
ST phosphorescent optical fiber coating; photoactive coating optical fiber; radiation interaction luminescent coating
IT Phosphorescent substances
(coatings contg., for optical fibers, for continuous optical ***bleaching*** of radation-induced ***color*** ***centers***)
IT Fiber optics
(coatings for, contg. luminescent materials, for continuous optical ***bleaching*** of radiation-induced ***color*** ***centers***)
IT Coating materials
(photoactive, contg. luminescent materials for continuous optical ***bleaching*** of radiation-induced ***color*** ***centers*** in optical fibers)
IT ***Color*** ***centers***
(radiation-induced, in optical fibers, continuous ***bleaching*** of, by luminescent materials in fiber coatings)

L5 ANSWER 71 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:118255 CAPLUS
DN 98:118255
ED Entered STN: 12 May 1984
TI ESR studies of damage processes in x-irradiated high purity a-silica:hydroxyl radical and characterization of the formyl radical defect
AU Griscom, D. L.; Stapelbroek, M.; Friebele, E. J.
CS Opt. Sci. Div., Nav. Res. Lab., Washington, DC, 20375, USA
SO Journal of Chemical Physics (1983), 78(4), 1638-51
CODEN: JCPSA6; ISSN: 0021-9606
DT Journal
LA English
CC 77-6 (Magnetic Phenomena)
Section cross-reference(s): 75
AB A range of high purity type III synthetic silicas (Suprasil 1, Spectrosil, Dynasil 1000) was subjected to 100 keV x-irradn. at 77 K and the induced ESR spectra were recorded at 100 K before and after successive pulse anneals to higher temps. Abs. spin concns. were detd. as functions of radiation dose, anneal temp. and time, prior irradn. history, and sample supplier. Defects monitored comprise E' ***centers*** , O-assocd. hole ***centers*** , at. H, and a previously unidentified defect in a-SiO2 characterized by a 13.3 mT doublet centered on g = 2.0. The 13.3 mT doublet is ascribed here to formyl radicals HCO produced by the reaction of radiolytic H atoms with minute amts. (.ltoreq.0.1 ppm) of dissolved CO present in Suprasil 1 and Dynasil 1000, but not Spectrosil. This identification is based on prodn. kinetics and the similarity of the spin Hamiltonian parameters measured at 30 K to those previously reported for the formyl radical in solid CO. Motional effects apparent in the HCO spectra at .gtoreq.100 K are interpreted with the aid of computer line shape simulations, and inferences are drawn concerning the interaction of the HCO mol. with the ***glass*** network. The isochronal anneal data are discussed in some detail and an effect of radiolytic H2 on the ***color*** - ***center*** ***bleaching*** kinetics is postulated.
ST ESR X irradn damage silica; vitreous silica irradn damage ESR; Suprasil

irradn damage ESR; Spectrosil irradn damage ESR; Dynasil irradn damage ESR
IT X-ray, chemical and physical effects
(damage by, in synthetic vitreous silica, ESR study of)
IT Electron spin resonance
(of synthetic vitreous silica irradiated by x-rays, damage processes in relation to)
IT ***Color*** ***centers***
(E', in synthetic vitreous silica irradiated by x-rays, ESR study of)
IT 60676-86-0
RL: PRP (Properties)
(ESR study of damage processes in x-irradiated synthetic)
IT 12385-13-6P, reactions
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(formation and reaction of, in x-irradiated vitreous silica, ESR study of)
IT 2597-44-6P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in x-irradiated vitreous silica, ESR study of)
IT 630-08-0, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with at. hydrogen in x-irradiated vitreous silica, ESR study of)

L5 ANSWER 72 OF 124 CAPLUS
AN 1980:85233 CAPLUS
DN 92:85233
ED Entered STN: 12 May 1984
TI The structure of ***color*** ***centers*** in photochromic ***glass***
AU Anikin, A. A.; Malinovskii, V. K.
CS Inst. Autom. Electrometry, Novosibirsk, 630090, USSR
SO Journal of Non-Crystalline Solids (1979), 34(3), 393-403
CODEN: JNCSBJ; ISSN: 0022-3093
DT Journal
LA English
CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB An ellipsoidal model of ***color*** ***centers*** in photochromic ***glass*** was proposed to explain an addnl. absorption spectrum. Absorption spectra of small (R .ltorsim. 100 .ANG.) Ag particles involving oblong and oblate ellipsoids of rotation were analyzed. The splitting of the absorption spectrum of the small Ag particles with non-spherical form resulted in an absorption spectrum different from that for spherical particles. Calcn. of the absorption spectra of the system of oblate ellipsoids with considerable dispersion in eccentricity and of .apprxeq.20 .ANG. in size was in good agreement with expt. Absorption spectra of the system of oblong ellipsoids differed significantly from exptl. findings, indicating that oblong particles were absent. To verify the basic theory of the ***color*** ***center*** model, advanced expts. were carried out on the ***bleaching*** of photochromic ***glass*** by monochromatic polarized light. The so called photo-adaptation effect was found, i.e., the absorption decreased faster at the wavelength of the ***bleaching*** light. The photo-adaptation spectral width indicated that the particle size was nearly 20 .ANG.. The ratio of changing absorption for perpendicular and parallel orientations of ***bleaching*** and reading polarization vectors was .apprxeq.0.7 in the longwave visible range, indicating that the ***color*** ***centers*** were substantially anisotropic. In the thermal recovery of photochromic ***glass*** the shortwave and longwave absorptions were ***bleached*** faster, indicating the lower stability of the strong oblate particles, which specifies absorption in those parts of the spectrum.
ST ***color*** ***center*** photochromic ***glass*** ; absorption spectra silver ***glass***
IT Ultraviolet and visible spectra
(of silver chloride photochromic ***glass***)
IT ***Color*** ***centers***
(structure of, in silver chloride photochromic ***glass***)
IT 7440-22-4, properties
RL: PRP (Properties)
(absorption spectrum of, in silver chloride photochromic ***glass***)

IT 7783-90-6, properties
RL: PRP (Properties)
(structure of ***color*** ***centers*** in photochromic ***glass*** of)

L5 ANSWER 73 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:619842 CAPLUS
DN 91:219842
ED Entered STN: 12 May 1984
TI Radiation ***color*** ***centers*** in arsenic trisulfide and arsenic triselenide ***glasses***
AU Moskal'onov, A. V.
CS Latv. Gos. Univ., Riga, USSR
SO Opt. Spektr. Svoistva Stekol, Tezisy Dokl. Vses. Simp., 4th (1977), 12-13. Editor(s): Polmane, V. K. Publisher: Latv. Gos. Univ. im. Petra Stuchki, Riga, USSR.
CODEN: 41JZAB
DT Conference
LA Russian
CC 73-4 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB The x-ray induced ***color*** ***centers*** were studied in ***glasses*** of the type: As2S3 and As2Se3 at 77 K with the broad absorption band in the long-wave region and EPR signals. The absorption band of the EPR signal was stable 1 h, in the dark, at -200.degree.. The study of the kinetics of the accumulation of the paramagnetic ***centers*** proved that x-ray emission caused the filling of defect states and the new defects were not obsd. With increasing temp. the ***color*** ***centers*** were ***decolorized*** . Induced optical absorption and EPR signals disappeared at 200-220 K. The value of activation energy of the thermal heating of ***color*** ***centers*** confirmed the presumption about the thermal recombination of the carriers attached to the defects. In natural cryst. As2S3 (auripigment) the x-ray emission at 77 K did not cause the formation of paramagnetic ***centers*** . The x-ray luminescence spectra were analogous to the photoluminescence spectra.
ST ***color*** ***center*** arsenic chalcogenide EPR; sulfide arsenic ***color*** ***center*** ; selenide arsenic ***color*** ***center***
IT ***Glass*** , nonoxide
RL: PRP (Properties)
(arsenic chalcogenide, ESR and luminescence of x-ray induced ***color*** ***centers*** in)
IT Electron spin resonance
(of arsenic trichalcogenide ***glasses*** contg. x-ray induced ***color*** ***centers***)
IT ***Color*** ***centers***
(x-ray induced, in arsenic trichalcogenide ***glasses***)
IT 1303-33-9 1303-36-2
RL: PRP (Properties)
(ESR and luminescence study of x-ray induced ***color*** ***centers*** in)

L5 ANSWER 74 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:584192 CAPLUS
DN 91:184192
ED Entered STN: 12 May 1984
TI Interaction of ***color*** ***centers*** formed in silicate ***glasses*** with IR radiation
AU Gagarin, A. P.; Glebov, L. B.; Dokuchaev, V. G.; Korzhikova, L. M.
CS Leningrad, USSR
SO Opt. Spektr. Svoistva Stekol, Tezisy Dokl. Vses. Simp., 4th (1977), 18-19. Editor(s): Polmane, V. K. Publisher: Latv. Gos. Univ. im. Petra Stuchki, Riga, USSR.
CODEN: 41JZAB
DT Conference
LA Russian
CC 73-2 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB The destruction of ***color*** ***centers*** formed by pulsed IR radiation in Na-K-Si ***glasses*** was studied. The concn. of the additives in inactive ***glass*** was <10-4%. The absorption in the

region 1060 nm was 3-5 .times. 10-5 cm-1. The ***color*** ***centers*** were formed by irradn. with .gamma.-rays (Co source) or UV light and the ***decolorization*** of unstable ***color*** ***centers*** was carried out with Ne-laser light at .mu. = 1060 nm. The ***decolorization*** was accompanied with increasing intensity of recombination luminescence. The presence of unstable ***color*** ***centers*** led to a decrease of the optical stability of the ***glasses*** . The absorption of stable ***color*** ***centers*** in the 1060-nm region was low (10-3 cm-1) and the ***decolorization*** was absent up to the threshold of the destruction. The decrease of the optical stability of ***glasses*** with increasing concn. of ***color*** ***centers*** was caused by the effective interaction of IR radiation with stable ***color*** ***centers*** . The ***decolorization*** of stable ***color*** ***centers*** was obsd. by IR-irradn. of the ***glasses*** contg. a high concn. of Fe2+ ions; the absorption band was found at 1100 nm. In this case it passed the thermal ***decolorization*** of ***color*** ***centers*** due to the heating of the ***glass*** .

ST ***color*** ***center*** interaction IR; silicate ***glass*** ***color*** ***center***

IT Infrared radiation, chemical and physical effects
Laser radiation, chemical and physical effects
(***color*** ***center*** interaction with, in silicate ***glasses***)

IT ***Color*** ***centers***
(in silicate ***glasses*** , interaction with IR radiation)

IT Luminescence
(of silicate ***glasses*** contg. ***color*** ***centers*** , interaction with IR radiation in relation to)

IT ***Glass*** , oxide
RL: PRP (Properties)
(silicate, ***color*** ***center*** interaction with IR radiation in)

L5 ANSWER 75 OF 124 CAPLUS

AN 1979:544835 CAPLUS

DN 91:144835

ED Entered STN: 12 May 1984

TI ***Color*** ***center*** formation due to alkali metal vapor exposure and x-ray irradiation of spinel transparent ***glass*** ceramics

AU Stryjak, A. J.; McMillan, P. W.

CS Dep. Phys., University of Warwick, Coventry, UK

SO Glass Technology (1979), 20(2), 53-8
CODEN: GLSTAK; ISSN: 0017-1050

DT Journal

LA English

CC 57-1 (Ceramics)
Section cross-reference(s): 73

AB ***Color*** ***centers*** produced in spinel transparent ***glass*** ceramics exposed to Na vapor were analyzed by ESR and optical absorption. A model is proposed for the possible mechanism involved in the formation of such ***color*** ***centers*** . Radiation damage by x-rays and the effect of another alkali vapor (Li) on the transparent ***glass*** -ceramics were studied to show any correlation between ***color*** ***centers*** produced by the different damage processes. Thermal ***bleaching*** was performed on the Na exposed samples to investigate the nature of ***color*** - ***center*** destruction.

ST spinel ***glass*** ceramic ***color*** ***center***

IT Simulation model
(for ***color*** ***center*** formation, in spinel ***glass*** ceramics)

IT ***Color*** ***centers***
(in spinel transparent ***glass*** ceramics, alkali metal vapor and x-ray irradn. effect on)

IT ***Glass*** ceramics
(spinel, ***color*** ***center*** formation in, by alkali metal vapor and x-ray irradn.)

IT 7439-93-2, uses and miscellaneous 7440-23-5, uses and miscellaneous
RL: USES (Uses)
(***color*** formation by, in spinel ***glass*** ceramics)

IT 1309-48-4, uses and miscellaneous 1314-13-2, uses and miscellaneous
1314-23-4, uses and miscellaneous
RL: USES (Uses)
(***glass*** ceramics, ***color*** ***center*** formation
in transparent, by alkali metal vapor and x-ray irradn.)

L5 ANSWER 76 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:63979 CAPLUS
DN 90:63979
ED Entered STN: 12 May 1984
TI Laser and thermal ***bleaching*** of ***color*** ***centers***
in sodium borate ***glasses***
AU Bukharaev, A. A.; Yafaev, N. R.
CS Phys.-Tech. Inst., Kazan, USSR
SO Physica Status Solidi A: Applied Research (1978), 50(2), 711-16
CODEN: PSSABA; ISSN: 0031-8965
DT Journal
LA English
CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance,
and Other Optical Properties)
AB The max. of the addnl. absorption band in .gamma.- or UV-irradiated Na
borate ***glasses*** shifts to higher energy when the low-energy side
of the band is ***bleached*** by a He-Ne laser, .lambda. = 632.8 nm.
Simultaneously the half-width of the addnl. absorption band decreases.
This phenomenon is assocd. with the fact that because of structural
disorder of ***glasses*** there is a distribution of ground-state
energies of trapped electrons forming the light-sensitive absorption band.
The distribution interval of the activation energy for trapped electrons
is estd. using the decompn. of the initial thermal ***bleaching***
curves into components. For UV irradiated ***glasses*** it is
.apprxeq.0.24 eV, and for .gamma.-irradiated ***glasses*** only 0.12
eV. These values correlate with the relative shift max. of the absorption
band at laser ***bleaching*** .
ST ***color*** ***center*** ***bleaching*** ***glass*** ;
laser ***bleaching*** ***color*** ***center*** ; thermal
bleaching ***color*** ***center***
IT Heat, chemical and physical effects
Laser radiation, chemical and physical effects
(***color*** ***center*** ***bleaching*** by, in sodium
borate ***glasses***)
IT ***Glass*** , oxide
RL: PRP (Properties)
(***color*** ***centers*** in sodium borate, laser and thermal
bleaching of)
IT Gamma ray, chemical and physical effects
Ultraviolet radiation, chemical and physical effects
(***color*** ***centers*** induced by, in sodium borate
glasses)
IT Trapping and Traps
(in sodium borate ***glasses*** , activation energy of)
IT ***Color*** ***centers***
(laser and thermal ***bleaching*** of, in sodium borate
glasses)
IT Ultraviolet and visible spectra
(of sodium borate ***glasses*** contg. ***color***
centers)

L5 ANSWER 77 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:46526 CAPLUS
DN 90:46526
ED Entered STN: 12 May 1984
TI Inhomogeneous ***bleaching*** of trapped electron absorption bands in
aqueous ***glasses*** during laser excitation
AU May, Roger; Walker, David C.
CS Chem. Dep., Univ. British Columbia, Vancouver, BC, Can.
SO Journal of the Chemical Society, Faraday Transactions 2: Molecular and
Chemical Physics (1978), 74(10), 1833-43
CODEN: JCFTBS; ISSN: 0300-9238
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 73

AB Trapped electrons, produced by .gamma.-irradn., in aq. ***glasses*** at 77 K were subjected to intense pulses of laser light at 694 nm. The absorbances of the samples were measured at 694, 633, 442, and 1152 nm during and after the excitation pulse in order to distinguish between transient and permanent ***bleaching*** . The transient ***bleaching*** was very much greater at the photolyzing wavelength than at any of the other wavelengths but some absorbance returned at 694 nm after irradn. whereas the absorbance elsewhere decreased. The max. excited state lifetime, from the measured transient ***bleaching*** efficiency, was detd. to be 2 .times. 10-9 s. Several processes were involved in the permanent ***bleaching*** effect which vary with the addn. of various ***glass*** -forming solutes. Results are presented for the effect of added electron scavengers on the generation of IR absorption and on partial ***bleaching*** prior to laser irradn.
ST laser ***bleaching*** electron absorption; aq ***glass*** trapped electron ***bleaching*** ; visible absorption electron aq ***glass*** ; photolysis electron aq ***glass***
IT Polaron in solid state
(absorption of, in aq. ***glasses*** , laser induced ***bleaching*** of)
IT Laser radiation, chemical and physical effects
(***bleaching*** by, of visible absorption of trapped electrons in aq. ***glasses***)
IT ***Color*** ***centers***
(***bleaching*** of, in aq. ***glasses*** , by laser radiation)
IT Radiolysis
(of aq. ***glasses*** , laser-induced ***bleaching*** of visible absorption of electron generated by)
IT 14797-55-8, properties
RL: PRP (Properties)
(electron scavenger, ***bleaching*** of absorption of trapped electrons in aq. ***glasses*** by laser radiation in presence of)
IT 107-21-1, uses and miscellaneous 127-08-2
RL: USES (Uses)
(visible absorption of electron in gamma-irradiated aq. ***glass*** contg., laser induced ***bleaching*** of)
IT 57-50-1, uses and miscellaneous 141-53-7 584-08-7 1310-58-3, properties 1310-73-2, properties 7447-41-8, properties 7601-89-0 7786-30-3, properties 10034-81-8 10043-52-4, properties
RL: USES (Uses)
(visible absorption of electron in gamma-irradiated aq. ***glass*** contg., laser-induced ***bleaching*** of)

L5 ANSWER 78 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1978:624862 CAPLUS
DN 89:224862
ED Entered STN: 12 May 1984
TI ***Color*** ***centers*** in vitreous silica
AU Greaves, G. N.
CS Res. Dev. Lab., Pilkington Brothers Ltd., Ormskirk, UK
SO Philosophical Magazine B: Physics of Condensed Matter: Statistical Mechanics, Electronic, Optical and Magnetic Properties (1978), 37(4), 447-66
CODEN: PMABDJ; ISSN: 1364-2812
DT Journal
LA English
CC 76-13 (Electric Phenomena)
Section cross-reference(s): 57, 73
AB ***Color*** ***centers*** in vitreous SiO2 are discussed in terms of dangling bond defects on Si and O sites. Because of the large cation-anion electronegativity difference, neutral singly occupied states will be unstable, decompg. into empty pos.-charged Si sp3 states and doubly occupied neg.-charged O 2p states. The energy levels for these states are sep. from the band edges and will give rise to features in the tail of the optical absorption edge. After ionizing irradn., electrons and holes are trapped at these defects converting them to neutral, metastable singly-occupied Si and O states. Considerable distortion of the lattice is expected, leading to absorption bands well below the optical absorption edge. Intense radiation increases the no. of charged and neutral defects. The absorption and luminescence data for ***color*** ***centers*** are analyzed and levels for the Si and O localized states are deduced. The arrangement of states in the energy gap

is consistent with the stability of charged defect states. The model gives an energy gap .apprx.11eV and it qual. describes many of the annealing and ***bleaching*** properties of the ***color*** ***centers*** .
ST silica ***glass*** ***color*** ***center*** ; bond dangling silica ***glass*** ; radiation silica ***color*** ***center*** ; energy level silica ***color*** ***center***
IT ***Glass*** , oxide
RL: USES (Uses)
(***color*** ***centers*** in irradiated and unirradiated, dangling bonds in relation to)
IT Radiation, chemical and physical effects
(***color*** ***centers*** induced by, in vitreous silica)
IT ***Color*** ***centers***
(in silica irradiated and unirradiated vitreous state, dangling bond defects in relation to)
IT Energy level
(of ***color*** ***center*** states in vitreous silica, dangling bonds in relation to)
IT Bond
(dangling, in silica irradiated and unirradiated vitreous state, ***color*** ***centers*** in relation to)
IT 60676-86-0
RL: USES (Uses)
(***color*** ***centers*** in irradiated and unirradiated, dangling bond defects in relation to)

L5 ANSWER 79 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1978:482309 CAPLUS
DN 89:82309
ED Entered STN: 12 May 1984
TI Spectral studies of silver halide photochromic ***glasses***
AU Anikin, A. A.; Malinovskii, V. K.; Tsekhomskii, V. A.
CS Novosibirsk, USSR
SO Avtometriya (1978), (1), 65-71
CODEN: AVMEBI; ISSN: 0320-7102
DT Journal
LA Russian
CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB The results are given of an investigation of Ag halide alloyed photochromic ***glasses*** . ***Glass*** specimens (1-mm thick) were irradiated with a Hg lamp and filter, Ar and He-Ne lasers, and a monochromator. The exptl. results are interpreted on the basis of ***color*** ***centers*** as a system of ellipsoidal particles with different eccentricity values. An important result is the detection of photoadaptation to the ***bleaching*** irradn.
ST silver halide photochromic ***glass*** spectra; ***color*** ***center*** silver halide ***glass***
IT Laser radiation, chemical and physical effects
Light, chemical and physical effects
(in ***color*** ***centers*** in silver halide photochromic ***glasses***)
IT ***Color*** ***centers***
(in silver halide photochromic ***glasses*** , radiation effects on)
IT Photochromism
(of silver halide ***glasses***)
IT Ultraviolet and visible spectra
(of silver halide photochromic ***glasses***)
IT Silver halides
RL: PRP (Properties)
(photochromic ***glasses*** , spectra of)
IT ***Glass*** , nonoxide
RL: PRP (Properties)
(photochromic, silver halide, spectra of)

L5 ANSWER 80 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1978:414140 CAPLUS
DN 89:14140
ED Entered STN: 12 May 1984
TI Radiation-induced ***centers*** in lithium disilicate ***glass***
AU Doi, Akira

CS Dep. Inorg. Mater., Nagoya Inst. Technol., Nagoya, Japan
SO Japanese Journal of Applied Physics (1978), 17(2), 279-82
CODEN: JJAPA5; ISSN: 0021-4922
DT Journal
LA English
CC 73-3 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB Radiation-induced paramagnetic, optical and thermoluminescent ***centers*** were correlated for x-irradiated lithium disilicate ***glass*** . The main ESR signal at g = 2.01 is the superposition of 2 lines, and is usually assigned to 2 optical ***centers*** in the visible range, but the present work rejected 1-to-1 correspondence between them. Radiation-induced ***centers*** ***bleached*** out at almost the same temp. irrespective of different thermal stabilities. This may be explained in terms of various possible combinations of the hole ***centers*** and electron ***centers*** .
ST x ray ***center*** lithium silicate; paramagnetic ***center*** lithium silicate; ***glass*** lithium silicate ***center***
IT X-ray, chemical and physical effects
(***centers*** induced by, in lithium disilicate ***glass***)
IT Paramagnetic ***centers***
(in lithium disilicate ***glass*** after x-ray irradn., ESR of)
IT ***Color*** ***centers***
(in lithium disilicate ***glass*** after x-ray-irradn.)
IT ***Glass*** , oxide
RL: PRP (Properties)
(lithium disilicate, radiation-induced ***centers*** in)
IT Electron spin resonance
Ultraviolet and visible spectra
(of lithium disilicate ***glass*** contg. radiation-induced ***centers***)
IT 12627-14-4
RL: PRP (Properties)
(***glass*** , radiation-induced ***centers*** in)

L5 ANSWER 81 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1978:30473 CAPLUS
DN 88:30473
ED Entered STN: 12 May 1984
TI Laser ***decolorization*** of ***color*** ***centers*** in potassium borate ***glass***
AU Bukharaev, A. A.; Yafaev, N. R.
CS Kazan. Fiz.-Tekh. Inst., Kazan, USSR
SO Fizika i Khimiya Stekla (1977), 3(4), 380-4
CODEN: FKSTD5; ISSN: 0132-6651
DT Journal
LA Russian
CC 75-2 (Crystallization and Crystal Structure)
Section cross-reference(s): 73
AB The nature of the ***color*** ***centers*** and the mechanism of their destruction by laser radiation was studied by detn. of the optical absorption spectra after optical and thermal ***decolorization*** and from the kinetics of laser ***decolorization*** . In potassium borate ***glass*** , the kinetics of ***color*** ***center*** degrdn. can be reasonably characterized by an expression obtained on the assumption that the electron ***centers*** are ***decolorized*** with max. optical absorption 640 nm, provided the probability of repeated electron capture is greater than that of its recombination with a hole ***center*** . At a wavelength of 632.8 nm, absorption is insignificantly affected by ***centers*** with max. absorption 620 nm, insensitive to laser radiation. With increasing temp., up to 80 K, an increase of the ***color*** ***center*** lifetime and a decrease in its sensitivity to laser radiation were obsd.
ST laser ***decolorization*** ***color*** ***center*** ***glass*** ; potassium borate ***glass*** ***decolorization***
IT Laser radiation, chemical and physical effects
(***decolorization*** of ***color*** ***centers*** in potassium borate ***glass*** by)
IT ***Color*** ***centers***
(***decolorization*** of, in potassium borate ***glass*** laser irradn.)
IT ***Glass*** , oxide

RL: PRP (Properties)
(potassium borate, laser ***decolorization*** of ***color*** ***centers*** in)
IT 1332-77-0
RL: PRP (Properties)
(laser decoloration of ***color*** ***centers*** in ***glass*** of)

L5 ANSWER 82 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1976:81201 CAPLUS
DN 84:81201
ED Entered STN: 12 May 1984
TI Heats of reaction of trapped intermediates in .gamma.-irradiated organic ***glasses*** and relaxation processes in unirradiated ***glasses*** measured by low temperature differential thermal analysis
AU Hager, Stanley L.; Willard, John E.
CS Dep. Chem., Univ. Wisconsin, Madison, WI, USA
SO Journal of Chemical Physics (1975), 63(2), 942-52
CODEN: JCPSA6; ISSN: 0021-9606
DT Journal
LA English
CC 71-1 (Nuclear Technology)
Section cross-reference(s): 69
AB Differential thermal anal. was used to det. the following: (1) the heat of photobleaching of trapped electrons in .gamma.-irradiated 3-methylpentane (I) ***glass*** as a function of .gamma. dose; (2) the heats of combination of radicals and of ions in .gamma.-irradiated I and methyltetrahydrofuran (II) ***glasses*** ; (3) the ***glass*** transition temps. and the rates of enthalpy loss during 77.degree.K annealing of I, I-d14, 3-ethylpentane, and II; (4) the effect of cooling rate and annealing time on crystn. of hexane in I cooled to 77.degree.K. The .DELTA.H of neutralization of photobleached electrons in .gamma.-irradiated I at 72.degree.K is .apprx.-150 kcal mole-1 at low dose, implying an upper limit of 80 kcal/mole-1 for the solvation energy of the combining charges, and decreases to .apprx.80 kcalmole-1 for a dose of 1.2 .times. 1020 eV g-1, implying an increasing ratio of reaction with radicals to reaction with cations as the dose is increased. When .gamma.-irradiated II is warmed from 77.degree.K, a large fraction of the trapped electrons appear to react with radicals to form carbanions, which then react with cations, the total .DELTA.G being .apprx.80 kcal mole-1. The .DELTA.G of ion pair solvation is estd. to be -120 to -150 kcal mole-1. The decrease in the enthalpy of the matrix due to relaxation during annealing in I at 77.degree.K parallels the decrease in the decay rate of trapped electrons for similar samples. The anomalous effects of sample size and shape on trapped electron decay rates in I ***glass*** as a function of time of annealing at 77.degree.K are rationalized in terms of the restrictions on viscous flow in different types of sample tubes.
ST thermodn intermediate radiolysis org ***glass*** ; methylpentane radiolysis electron photobleaching thermodn; methyltetrahydrofuran radiolysis electron photobleaching thermodn
IT ***Color*** ***centers***
(***bleaching*** of, in .gamma.-irradiated methyl pentane and methyltetrahydrofuran ***glasses***)
IT Heat of solvation
(of electrons trapped in .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glasses***)
IT Crystallization
(of hexane in methylpentane ***glass*** , effect of cooling and annealing on)
IT Photolysis
(of intermediate products and electrons trapped in .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glasses*** , thermodn. of)
IT Thermodynamics
(of intermediate products from .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glasses*** , photobleaching effect on)
IT Radiolysis
(of methylpentane and methyltetrahydrofuran in ***glassy*** matrixes, thermodn. and photobleaching of intermediates in)
IT Heat of annealing
(of methylpentane, methyltetrahydrofuran and ethylpentane

glasses , ***glass*** transition temp. in relation to)
IT Heat of neutralization
(of photobleached electrons trapped in .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glasses***)
IT Heat of dissociation
(of radicals and ions in .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glasses*** in recombination)
IT Electron, conduction
(trapped, in .gamma.-irradiated methylpentane and methyltetrahydrofuran ***glass*** , thermodn. of photobleached)
IT 110-54-3, properties
RL: PRP (Properties)
(crystn. of, in methylpentane ***glassy*** matrix, cooling and annealing effect on)
IT 617-78-7 20586-83-8
RL: PROC (Process)
(heat of annealing of ***glassy*** , ***glass*** transition temp. in relation to)
IT 96-14-0 96-47-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(radiolysis of, in ***glassy*** matrix, thermodn. and photobleaching of intermediates in)

L5 ANSWER 83 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1974:32488 CAPLUS
DN 80:32488
ED Entered STN: 12 May 1984
TI Kinetics of photographic coloration of ***glasses*** containing silver halides
AU Voloshin, V. A.; Goikhman, V. Yu.; Goikhman, E. V.; Minakov, V. A.
CS USSR
SO Steklo, Tr. Nauch.-Issled. Inst. Stekla (1972), No. 2, 55-60
From: Ref. Zh., Khim. 1973, Abstr. No. 12B1207
DT Journal
LA Russian
CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 71
AB The kinetics of photolysis was studied in photochromic ***glasses*** contg. Ag halides as the light-sensitive components, and also CuO. The data obtained on the change in the optical d. (.DELTA.D) of the ***glasses*** during their darkening under the influence of uv radiation of various intensities (I) and during their subsequent ***bleaching*** in the dark in the absence of CuO fit the simple exponential dependences .DELTA.D = .DELTA.D .infin. [1 - exp(-t/.tau.d)] and .DELTA.D = .DELTA.D .infin. exp(-t/.tau.b), where the lifetimes of darkening and ***bleaching*** are related by: 1/.tau.d - 1/.tau.b = aI (a is a const.). During ***bleaching*** , the dependence of ln .tau.b on 1/T is linear and leads to a value of 0.39 eV for the activation energy (E) in the absence of CuO. Introduction of CuO not only decreases E(in some cases to 0.15 eV), but also changes the kinetics of ***bleaching*** : the dependence of ln .DELTA.D/.DELTA.D .infin. on t is a broken line (instead of the straight line in the absence of CuO); i.e., the Cu2+ ions participate in the formation of another type of ***color*** ***center*** in the short-wavelength region, which is absent in the pure Ag halide. Addn. of CuO also decreases .tau.b, esp. at low concns. of CuO. To explain the data, a band structure is proposed, on the basis of which it is possible to construct a system of kinetic equations which show satisfactory qual. agreement with expt. This explanation is similar to the exciton mechanism of Ryzhanov, which was proposed to explain the photochem. processes in Ag halide crystals in photog. emulsions.
ST kinetics coloration photochromic ***glass*** ; silver halide photochromic ***glass*** ; copper oxide photochromic ***glass***
IT Photochromism
(of silver halides in ***glasses*** , kinetics of)
IT Photography
(photochem. processes of cryst. silver halides in, mechanism of)
IT Silver halides
RL: PROC (Process)
(photochromism of, in ***glasses*** , kinetics of)
IT 1317-38-0, properties
RL: PRP (Properties)
(photochromism of silver halides in ***glasses*** in presence of)

L5 ANSWER 84 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1973:411148 CAPLUS
DN 79:11148
ED Entered STN: 12 May 1984
TI Energy level structure of trapped elecrons in 3-methylhexane ***glass*** from photoconductivity and optical ***bleaching*** studies
AU Huang, Timothy; Kevan, Larry
CS Dep. Chem., Wayne State Univ., Detroit, MI, USA
SO Journal of the American Chemical Society (1973), 95(10), 3122-8
CODEN: JACSAT; ISSN: 0002-7863
DT Journal
LA English
CC 71-9 (Electric Phenomena)
Section cross-reference(s): 65, 73, 22
AB Electrons are trapped in .gamma.-irradiated 3-methylhexane (3MH) ***glass*** at 77.degree.K. Monochromatic photoexcitation produces photocond. and optical ***bleaching*** with a threshold near 1.0 eV and a peak near 1.24 eV. This transition is linear in light intensity and independent of temp. at 4.2-77.degree.K, so it is interpreted as a 1-photon transition directly to the conduction band or to an autoionizing state. Photoexcitation near 1650-1700 nm discloses a 2-photon transition which depends on the light intensity squared. The first photon corresponds to the well-known optical absorption of trapped electrons in 3MH at 1650 nm. This transition is interpreted as a 1s .fwdarw. 2p type. The 2p state then presumably crosses to an intermediate 2s-type state, from which the 2nd photon is absorbed. The threshold of the 2nd photon transition was not detd., but the transition appears to have a peak near 1700 nm. The temp. dependence of both optical ***bleaching*** and photocond. under photoexcitation with .lambda. > 1400 nm shows that population of the intermediate 2s-type state involves an activation energy .apprx.0.001 eV. The deduced energy-level structure of trapped electrons in 3MH is remarkably similar to the structure in the more polar matrix, methyltetrahydrofuran.
ST energy level trapped electron; methylhexane ***glass*** trapped electron; hexane methyl ***glass*** photocond; photocond methylhexane ***glass*** ; optical ***bleaching*** methylhexane ***glass***
IT ***Color*** ***centers***
(***bleaching*** of, in methylhexane ***glass*** , energy level transitions in relation to optical)
IT Energy level transition
(in methylhexane ***glass*** , optical ***bleaching*** and photocond. in relation to)
IT ***Glass***
RL: PRP (Properties)
(methylhexane, optical ***bleaching*** and photocond. of, energy level transitions in relation to)
IT Photoconductivity and Photoconduction
(of methylhexane ***glass*** , energy level transitions in relation to)
IT 589-34-4
RL: PRP (Properties)
(***glass*** , optical ***bleaching*** and photocond. of, energy level transitions in relation to)

L5 ANSWER 85 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1973:143019 CAPLUS
DN 78:143019
ED Entered STN: 12 May 1984
TI Restoration to transparency of radiation-blackened pyrex
AU Sherman, N. K.
CS Phys. Div., Natl. Res. Counc. Canada, Ottawa, ON, Can.
SO Nuclear Instruments & Methods (1973), 108(1), 29-31
CODEN: NUIMAL; ISSN: 0029-554X
DT Journal
LA English
CC 76-13 (Nuclear Technology)
Section cross-reference(s): 73, 57
AB ***Glass*** which is damaged by ionizing radiation becomes opaque to visible light because of absorption by trapped e, which form ***color*** ***centers*** . Objects made of ***glass*** may have to be discarded after receiving absorbed doses which have affected their transparency but

not their mech. integrity. A practical method of restoring the transparency of irradiated Pyrex by ***bleaching*** the ***color*** ***centers*** with uv radiation is described. Pyrex windows on an accelerator beam tube operating at a pressure of 1 .times. 10-7 torr which became opaque due to megarad absorbed doses of ionizing radiation were repeatedly restored to transparency in situ without affecting the vacuum in the pipe.

ST ***bleaching*** irradn darkened Pyrex

IT Accelerators and Acceleration
(Pyrex windows of, transparency restoration in, in situ)

IT ***Glass***
RL: PROC (Process)
(Pyrex, transparency restoration of radiation-blackened, with uv light)

IT ***Color*** ***centers***
(***bleaching*** of, in Pyrex ***glass*** with uv ligth, transparency restoration by)

IT Ultraviolet light, chemical and physical effects
(of transparency restoration by, in radiation-blackened Pyrex ***glass***)

L5 ANSWER 86 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1973:21391 CAPLUS

DN 78:21391

ED Entered STN: 12 May 1984

TI Energy level structure and mobilities of excess electrons in aqueous and organic ***glasses***

AU Kevan, Larry

CS Dep. Chem., Wayne State Univ., Detroit, MI, USA

SO Journal of Physical Chemistry (1972), 76(25), 3830-8
CODEN: JPCHAX; ISSN: 0022-3654

DT Journal

LA English

CC 71-1 (Electric Phenomena)
Section cross-reference(s): 65

AB Recent photocond. and optical ***bleaching*** studies of trapped electrons (et-) as a functon of wavelength and temp. have delineated the energy-level structure of electrons in matrixes of varying polarity. Results are described for alk. ice (10M NaOH), 5M K2CO3 ice, cryst. ice, methyltetrahydrofuran (MTHF), and 3-methylhexane (3MH) solid matrixes. In alk. ice, no stable bound excited state exists for trapped electrons. This conclusion is based on a wavelength-independent quantum efficiency for ***bleaching*** in the et- absorption band and on temp.-independent photocond. and optical ***bleaching*** responses between 77 and 4.2.degree.K. In single-crystal ice an excited state for et- is found .apprx.0.4 eV below the lowest conduction level from photobleaching quantum efficiency measurements. In MTHF, 2 excited states of et- have been found. One is optically allowed and is .apprx.0.6 eV below the bottom of the conduction state in a vertical transition from the ground state. The other is optically forbidden and is .apprx.1.1 eV below the bottom of the conduction state in a vertical transition from this optically forbidden state. If the ground state is described by a 1s-type wave function, the optically allowed state can be described by a 2p function and the optically forbidden state by a 2s function. Photocond. can be generated by both 1- and 2-photon processes. The 2-photon process can be interpreted to occur via a 2s state. The energy-level structure of et- in 3MH is similar to that in MTHF. The energy-level structure in the different matrixes can be semiquant. accounted for by the semicontinuum model for trapped electrons. Both Hall and drift mobilities were measured for photoexcited electrons in alk. ice. The results are well described by a band model and the main scattering mechanisms are identified as optical lattice phonon scattering and O- Coulombic scattering. Drift mobilities of mobile electrons in MTHF indicate that the electron motion is best described by a hopping model at 40-77.degree.K.

ST energy level structure ***glass*** ; mobility excess electron; trapped electron matrix; photocond aq org ***glass*** ; optical ***bleaching*** ***glass***

IT ***Glass***
RL: PRP (Properties)
(aq. and org., electron mobility and energy-band structure of)

IT ***Color*** ***centers***
(in aq. and org. ***glasses***)

IT Photoconductivity and Photoconduction

(of aq. and inorg. ***glasses***)
IT Energy level, band structure
(of aq. and org. ***glasses***)
IT Electron, conduction
(photoexcited, mobility of, in aq. and inorg. ***glasses***)
IT Phonon
(scattering by, of electrons in aq. and org. ***glasses***)
IT 7732-18-5, ice
RL: PRP (Properties)
(electron mobility and energy-band structure of)
IT 584-08-7
RL: USES (Uses)
(electron mobility and energy-band structure of aq. vitreous systems with)
IT 1310-73-2, properties
RL: PRP (Properties)
(electron mobility and energy-band structure of aq. vitreous systems with)
IT 589-34-4 25265-68-3
RL: PRP (Properties)
(vitreous, electron mobility and energy-band structure of)

L5 ANSWER 87 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1971:546031 CAPLUS
DN 75:146031
ED Entered STN: 12 May 1984
TI Ultraviolet-induced transient and stable ***color*** ***centers*** in self-O-switching laser ***glass***
AU Landry, R. J.; Suitzer, E.; Bartram, R. H.
CS Cent. Res. Lab, Am. Opt. Corp., Southbridge, MA, USA
SO Journal of Applied Physics (1971), 42(10), 3827-38
CODEN: JAPIAU; ISSN: 0021-8979
DT Journal
LA English
CC 73 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
AB The optical absorption spectrum of uv-induced room-temp. stable ***color*** ***centers*** and the uv spectrum for their generation in a laser self-Q-switching ***glass*** were obtained. The optical absorption spectrum is similar to that for x-ray-irradiated silicate ***glasses*** of simpler compn. The uv generation spectrum consisted of a narrow Gaussian line of width 2250 cm-1 with peak at 45,800 cm-1. The optical absorption spectrum of the uv-induced transient ***color*** ***centers*** was also obtained and appears to consist of the superposition of a broad asymmetric absorption band peaked near 740 nm and a Gaussian-shaped annihilation band peaked near 674 nm. The lifetime of the 740-nm band was .apprx.200 msec and that of the 674-nm band .apprx.400 msec. The 740-nm transient absorption band is identified with the E1,2-band which Mackey, Smith, and Halperin attribute to a trapped electron polaron. The line shape of this transient absorption is interpreted in terms of a large-polaron strong-coupling model from which various properties are inferred. The transient annihilation band at 674 nm is identified with the temporary ***bleaching*** of a room-temp. stable trapped-hole ***center*** . A model is suggested for the production of both stable and transient ***color*** ***centers*** .
ST laser ***glass*** UV ***color*** ***center***
IT ***Color*** ***centers***
(in laser ***glasses*** , properties of stable and transient)
IT ***Glass***
RL: DEV (Device component use); USES (Uses)
(laser, ***color*** ***centers*** in)
IT Spectra, visible and ultraviolet
(of ***glass*** , contg. laser radiation induced ***color*** ***centers***)
IT Laser radiation, chemical and physical effects
(on ***glass*** , stable and transient ***color*** ***centers*** in relation to)

L5 ANSWER 88 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1970:418045 CAPLUS
DN 73:18045
ED Entered STN: 12 May 1984

TI Photometric study of the oxygen diffusivity in an aluminosilicate
glass
AU Lawless, William N.; Wedding, Brent
CS Res. and Develop. Lab., Corning Glass Works, Corning, NY, USA
SO Journal of Applied Physics (1970), 41(5), 1926-9
CODEN: JAPIAU; ISSN: 0021-8979
DT Journal
LA English
CC 57 (Ceramics)
AB The diffusivity of O in an aluminosilicate ***glass*** from 630.degree. to 830.degree. is derived from optical transmission measurements, wherein the rate of ***bleaching*** of Ti3+ ***color*** ***centers*** by the diffusing O at these temps. was measured. The finite-thickness soln. to the heat equation is used to interpret the data; the O diffusivity on this temp. range can be represented by D = 28.4 exp(-39.6 .+-. 3.4 kcal/RT) cm/sec. The O diffuses interstitially as mol. O, because the activation energy is smaller than the energy to split an Si-O bond: 50 kcal/mole. As a check on the technique and results, penetration measurements were made on a moving ***color*** boundary, with identical results.
ST oxygen diffusivity aluminosilicate ***glasses*** ; diffusivity oxygen aluminosilicate ***glasses*** ; aluminosilicate ***glasses*** oxygen diffusivity; ***glasses*** aluminosilicate oxygen diffusivity; ***color*** ***centers*** aluminosilicate ***glasses*** ; titanium ***color*** ***centers*** ***glasses***
IT ***Glass***
RL: USES (Uses)
(diffusion in aluminosilicate, of oxygen, titanium ***color*** ***center*** ***bleaching*** in relation to)
IT ***Color*** ***centers***
(in ***glass*** , ***bleaching*** of)
IT Diffusion
(of oxygen, in aluminosilicate ***glass***)
IT 7440-32-6, properties
RL: PRP (Properties)
(***color*** ***centers*** of, ***bleaching*** in aluminosilicate ***glass***)
IT 7782-44-7, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(diffusion of, in aluminosilicate ***glass***)

L5 ANSWER 89 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1970:71646 CAPLUS
DN 72:71646
ED Entered STN: 12 May 1984
TI Destruction of ***color*** ***centers*** of sodium chloride single crystals during shock compression
AU Yakusheva, O. B.; Yakushev, V. V.; Dremin, A. N.
CS Filial Inst. Khim. Fiz., Chernogolovka, USSR
SO Doklady Akademii Nauk SSSR (1969), 189(5), 991-2 [Phys]
CODEN: DANKAS; ISSN: 0002-3264
DT Journal
LA Russian
CC 70 (Crystallization and Crystal Structure)
AB Changes in ***color*** of NaCl single crystals tinted by means of 60Co (dose, 0.75 megarads) and shock compressed along their [100] axis were stabilized (fixed) by the method of light reflection by using an esp. sensitive photographic film. The crystal was irradiated by an Ar light source passing through a filter of org. ***glass*** (Plexiglas). Discoloring of the crystal was obsd. with pressures 30 and 180 kilobars. At pressures >60 kilobars, this phenomenon is explained by the shifting o f the F ***centers*** absorption band; however, at pressures = .apprx.30 kilobars , it is probably related to the appearance of a great no. of electron traps at the front of the impact wave ***Decolorization*** by the action of temp. which, under these conditions, increases only to .apprx.20.degree., is excluded.
ST ***color*** ***centers*** NaCl; sodium chloride ***color*** ***centers*** ; chlorides Na ***color*** ***centers*** ; shock compression NaCl
IT Shock waves
(compression by, of sodium chloride contg. cobalt, ***color*** ***centers*** in relation to)

IT   ***Color***   ***centers***
        (in sodium chloride, contg. cobalt, shock compression effect on)
IT   7440-48-4, properties
       RL: PRP (Properties)
        (***color***   ***centers***   in sodium chloride contg., shock
        waves effect on)
IT   7647-14-5, properties
       RL: PRP (Properties)
        (***color***   ***centers***   in, contg. cobalt, shock wave effect
        on)

L5   ANSWER 90 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1968:472118 CAPLUS
DN   69:72118
ED   Entered STN: 12 May 1984
TI   Mechanisms of radiation effects of lasers
AU   Compton, D. M. J.; Cesena, R. A.
CS   Gen. At. Div., Gen. Dyn. Corp., San Diego, CA, USA
SO   IEEE Transactions on Nuclear Science (1967), 14(6), 55-61
       CODEN: IETNAE; ISSN: 0018-9499
DT   Journal
LA   English
CC   71 (Electric Phenomena)
AB   The effects of irradn. on GaAs injection diodes and optically pumped
       lasers including CaWO4:Nd,   ***glass***   :Nd, and Y Al garnet:Nd were
       studied. The main radiation damage to a GaAs laser diode was to change
       its threshold current because of a decrease in electroluminescent
       efficiency. Annealing of radiation damage was produced by passing short
       high formed current pulses through the diode at room temp. Optically
       pumped lasers showed a redn. of laser output after irradn., primarily
       owing to optical loss of coherent light. The optical loss is assocd. with
         color   ***centers***   that form by an ionization effect rather
       than a displacement radiation effect, since the effect of irradn. depends
       only on the energy deposited in the laser rod and not on the type or
       energy of radiation. Optical   ***bleaching***   by the pumping light of
       the   ***color***   ***centers***   produced by irradn. was significant
       in Nd-doped lasers. All samples were restored to pre-irradn. conditions
       by annealing for 1 hr. at 350.degree..
ST   radiation defects Ga arsenides; defects radiation Ga arsenides; lasers
       diodes Ga arsenides; diodes lasers Ga arsenides; arsenides Ga diodes
       lasers; gallium arsenides diodes
IT   ***Color***   ***centers***
        (in lasers, radiation-produced)
IT   ***Glass***
       RL: USES (Uses)
        (lasers from neodymium-contg., radiation effect on)
IT   Radiation, chemical and physical effects
        (on lasers)
IT   Lasers
        (radiation effect on)
IT   7790-75-2   12005-21-9
       RL: USES (Uses)
        (laser from neodymium-contg., radiation effect on)
IT   7440-00-8, uses and miscellaneous
       RL: USES (Uses)
        (lasers contg., radiation effect on)
IT   1303-00-0, uses and miscellaneous
       RL: DEV (Device component use); USES (Uses)
        (lasers, radiation effect on)

L5   ANSWER 91 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1968:407220 CAPLUS
DN   69:7220
ED   Entered STN: 12 May 1984
TI   Spectrophotometric identification of .gamma.-radiolytic intermediates in a
       new halogenic   ***glassy***   matrix
AU   Grimison, A.; Simpson, G. A.
CS   Univ. Puerto Rico, Rio Piedras, P. R.
SO   Journal of Physical Chemistry (1968), 72(5), 1776-9
       CODEN: JPCHAX; ISSN: 0022-3654
DT   Journal
LA   English

CC 74 (Radiation Chemistry, Photochemistry, and Photographic Processes)
AB The absorption spectra, dose dependence, and character of the intermediates produced by .gamma.-radiolysis at 77.degree.K. of a 50:50 vol. % mixt. of CCl3F and CF2BrCF2Br have been detd. ***Color*** ***centers*** are formed at 330 and 585 m.mu. which can be ***bleached*** by light of suitable wavelengths and which are assigned to cationic species. The stabilization of other cationic intermediates by this matrix is demonstrated by the detection of intermediates of several heterocyclic additives. Identification of the following cations and their absorption max. has been made: thiophene (830, 320 m.mu.), pyrrole (800 m.mu.), and pyridine (380 m.mu.).
ST halocarbons radiolysis; radiolysis halocarbons; halogenic ***glassy*** matrix; ***glassy*** matrix halogenic; matrix ***glassy*** halogenic; gamma radiolysis products detn; radiolysis products detn
IT Radiolysis
(Freon ***glassy*** mixts. as matrixes for)
IT Matrix media
(for radiolysis, Freon mixts. as)
IT ***Color*** ***centers***
(in Freon ***glassy*** mixts. bombarded by .gamma.-rays)
IT Spectra, visible and ultraviolet
(of Freon solid mixts. bombarded by .gamma.-rays)
IT 109-97-7 110-00-9 110-02-1, reactions 110-86-1, reactions 288-32-4 289-95-2 290-37-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(radiolysis of, in solid matrix of Freon mixts.)
IT 124-73-2
RL: USES (Uses)
(solid matrix from ***glassy*** mixt. of trichlorofluoromethane and, for radiolysis studies)
IT 75-69-4
RL: USES (Uses)
(solid matrix from ***glassy*** mixts. of Freon-114 B2 and, for radiolysis studies)

L5 ANSWER 92 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1967:446687 CAPLUS
DN 67:46687
ED Entered STN: 12 May 1984
TI Radiation-induced defects and structure of barium silicate ***glasses***
AU Bishay, Adli M.; Gomaa, Ibrahim
CS United Arab Republic At. Energy Estab., Caiiro, India
SO Journal of the American Ceramic Society (1967), 50(6), 302-7
CODEN: JACTAW; ISSN: 0002-7820
DT Journal
LA English
CC 57 (Ceramics)
AB The effect of increasing BaO on the intensity and position of absorption bands induced in Ba silicate ***glasses*** was studied. Many of these ***glasses*** showed a 2-step process in the growth and thermal ***bleaching*** curves. This process was attributed to 2 types of defects in the ***glass*** , induced and intrinsic. Molar vol., in absorption and x-ray diffraction studies predicted structural changes at compns. contg. .apprx.22.5 and 27.5 mole % BaO. The results of .gamma.-induced absorption were in line with these predictions, supporting the view that ***color*** ***center*** studies can be used to detect changes in structure, esp. when high radiation doses are applied.
ST DEFECTS BA SILICATE ***GLASSES*** ; RADIATION DEFECTS ***GLASSES*** ; ***GLASSES*** BA SILICATE DEFECTS; ***COLOR*** ***CENTERS*** ***GLASSES***
IT ***Glass***
RL: USES (Uses)
(barium silicate, .gamma.-ray effect on)
IT Gamma rays, chemical and physical effects
(on ***glass*** (barium silicate))
IT 12650-28-1, Silicic acid, barium salt
RL: USES (Uses)
(***glass*** , .gamma.-ray effect on)

L5 ANSWER 93 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1967:416643 CAPLUS
DN 67:16643

ED Entered STN: 12 May 1984
TI Saturable absorption of ***color*** ***centers*** in neodymium(III) and neodymium(III)-ytterbium(III) laser ***glass***
AU Snitzer, Elias; Woodcock, Richard F.
CS American Opt. Co., Southbridge, MA, USA
SO IEEE Journal of Quantum Electronics (1966), 2(9), 627-32
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 73 (Spectra and Other Optical Properties)
AB By satd. absorption of ***color*** ***centers*** in ***glass***, self Q-switched pulses are obtained, as in ***glass*** codoped with UO22+ and Nd3+. One of the commonly used laser ***glasses*** contained 5 wt. % Nd2O3 in a ***glass*** base consisting of 72 wt. % SiO2, 11 K2O, 8 Na2O, 1 Li2O, 5 BaO, 2 Al2O3, and 1 Sb2O3. The Sb is added for bubble removal in making the ***glass*** and to prevent solarization. If the Sb is left out, ***color*** ***centers*** are produced by uv light whose wavelength is shorter than 300 m.mu.. Three broad absorption bands result, which are stable at room temp. They are centered at 310, 450, and 620 m.mu.. The stable ***color*** ***centers*** are ***bleached*** on exposure to visible or uv light of wavelength longer than 300 m.mu. and they are completely ***bleached*** after heating to 200.degree. for 1 hr. Addnl. ***color*** ***centers*** are produced with room temp. decay times short enough so that they are in the ***glass*** only while the uv from the flashlamp is present. At 300.degree.K., the short lived ***color*** ***centers*** give a 5%/cm. at 1 .mu. and are responsible for satd. absorption in the laser.
ST LASERS ND YB ***GLASS*** ; ***GLASS*** ND YB LASERS; NEODYMIUM YB ***GLASS*** LASERS; ***COLOR*** ***CENTERS*** ABSORPTION; YTTERBIUM ND ***GLASS*** LASERS
IT Optical absorption
(by laser ***glasses*** contg. neodymium or neodymium and ytterbium, saturable absorption and)
IT Lasers
(from neodymium or neodymium and ytterbium in ***glass*** , saturable absorption of ***color*** ***centers*** in)
IT ***Color*** ***centers***
(in laser ***glasses*** contg. neodymium or neodymium and ytterbium, saturable absorption of)
IT ***Glass***
RL: DEV (Device component use); USES (Uses)
(lasers, saturable absorption of ***color*** ***centers*** in neodymium-contg. or neodymium-ytterbium-contg.)
IT 7440-36-0, uses and miscellaneous
RL: USES (Uses)
(laser ***glass*** contg., bubble removal and desolarization in relation to)
IT 7440-00-8, properties
RL: PRP (Properties)
(optical absorption (saturable) of laser ***glasses*** contg.)
IT 7440-00-8, properties 7440-64-4, properties
RL: PRP (Properties)
(optical absorption by laser ***glasses*** contg., saturable absorption and)

L5 ANSWER 94 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1967:51373 CAPLUS
DN 66:51373
ED Entered STN: 12 May 1984
TI .gamma.-Dosimetry in the core of the WWR-S research reactor
AU Novotny, Josef; Zajic, Vladimir
CS Fac. Tech. Jaderne Fyziky, Prague, Czech.
SO Jaderna Energie (1966), 12(12), 441-4
CODEN: JADEAQ; ISSN: 0448-116X
DT Journal
LA Czech
CC 76 (Nuclear Technology)
AB .gamma.-Radiation in the presence of n was measured by means of a special phosphate ***glass*** (compn. given) which becomes colored under the influence of radiation. After irradn., the ***glass*** was heated at 90.degree. for 1 hr. to ***bleach*** the unstable ***color***

centers and establish a const. ***color*** , which was then measured on a spectrophotometer. The ***glasses*** were calibrated with known doses of 60Co and 137Cs. Corrections were made for the presence of n. Measurements were carried out in the reactor water loop and a reactor water probe in the reactor core. The purpose was to map .gamma.-fields in the loop and probe being used for the study of the corrosion of materials under the influence of radiation. The method was applicable in the range 104-5 .times. 106r./min. The .gamma.-intensity in the loop was .apprx.2 .times. 106, in the probe 1.3 .times. 105 r./min. The error was .apprx.10%. Measurement of the profile of .gamma.-intensity along the axis of the field tube of the water loop, gave an est. of the distribution of .gamma.-intensity with the height in the reactor. In measurements with the probe, the dosimetric ***glass*** was put in position and then the reactor was started; total time of measurement was 1-2 hrs. In measurements in the loop, where the total time of measurement was only 2-4 min., the reactor was started and brought to full power (2 Mw.) and then the dosimetric ***glass*** was placed.

ST ***GLASS*** PHOSPHATE DOSIMETER; GAMMAS DOSIMETRY REACTORS CORE; DOSIMETRY GAMMAS REACTORS CORE; REACTORS CORE GAMMAS DOSIMETRY; CORE REACTORS GAMMAS DOSIMETRY; PHOSPHATE ***GLASS*** DOSIMETER

IT Gamma rays
(dosimetry, with phosphate ***glasses*** in nuclear reactor core)

IT ***Glass***
RL: PROC (Process)
(gamma-ray dosimetry with phosphate, in nuclear reactor core)

IT Dosimetry
(gamma-ray, with phosphate ***glasses*** in nuclear reactor core)

L5 ANSWER 95 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1967:14922 CAPLUS

DN 66:14922

ED Entered STN: 12 May 1984

TI Optical studies in x-irradiated high-purity sodium silicate ***glasses***

AU Mackey, John H.; Smith, Herbert Lee; Halperin, Abraham

CS Mellon Inst., Pittsburgh, PA, USA

SO Journal of Physics and Chemistry of Solids (1966), 27(11-12), 1759-72
CODEN: JPCSAW; ISSN: 0022-3697

DT Journal

LA English

CC 71 (Electric Phenomena)

AB Optical processes in x-irradiated Na silicate ***glasses*** , mostly of compn. Na2O.2.5SiO2, were studied between 77.degree. and .apprx.650.degree.K. Seven ***color*** ***centers*** were identified from optical absorption or emission peaks and classified as trapped electrons or holes. From changes in colorability, it was concluded that some defect concns. could be modified by melting in graphite instead of Pt, by varying melting temp., or by subsequent annealing above 550.degree.C. At 77.degree.K., irradiation produced a strong absorption band of trapped electrons (the E1- band) which was peaked near 680 m.mu. (in Na ***glasses***) and had a long tail extending into the near uv. The E1- ***centers*** , which showed a continuous range of thermal stabilities (and corresponding absorption peak shifts), are regarded as formed by electron trapping at a local concn. of the Na+ in the interstices of the ***glass*** network. A distinction was made between E1- ***centers*** and E2- ***centers*** , which have similar optical properties but higher thermal stabilities; these latter ***centers*** were enhanced in ***glasses*** melted under reducing conditions. During thermal and light ***bleaching*** of the E1,2- bands and others assigned to trapped electrons, recombination luminescence was observed. For example, ***bleaching*** of the E1- and E2- ***centers*** was accompanied by broad glow peaks near 125 and 280.degree.K., resp. The emission processes were assigned to recombination between a "freed" electron and a trapped hole ***center*** (the H1+ ***center***). The luminescent ***centers*** also showed a range of thermal stabilities and corresponding shifts in the emission peak wavelength (from 330 to >420 m.mu. in the temp. range covered); thus their emission was quenched thermally over a wide temp. range. Other ***centers*** were assocd. with 4 absorption bands which were stable to higher temps. Two visible bands (peaked at 460 and 620 m.mu.) were assigned to trapped holes, while 2 bands in the uv (peaked near 305 and 235 m.mu.) were assigned to trapped electrons. Thermal ***bleaching***

of the latter ***centers*** was accompanied by glow peaks at
450-550.degree.K. 21 references.
ST OPTICAL PROCESSES ***GLASSES*** ; X IRRADN NA SILICATE ***GLASSES*** ; IRRADN NA SILICATE ***GLASSES*** ; ***GLASSES*** OPTICAL PROCESSES; SODIUM SILICATE ***GLASSES*** IRRADN
IT Optical absorption
(by sodium silicate ***glasses*** contg. ***color*** ***centers***)
IT Spectra, visible and ultraviolet
(***color*** ***centers*** and, of sodium silicate x-irradiated ***glasses***)
IT Trapping
(in sodium silicate ***glasses*** contg. ***color*** ***centers***)
IT ***Color*** ***centers***
(in sodium silicate ***glasses*** irradiated by x-rays)
IT Luminescence
(recombination, of sodium silicate ***glasses*** contg. ***color*** ***centers***)
IT 1344-09-8, Silicic acid, sodium salt
RL: USES (Uses)
(***color*** ***centers*** and trapping x-irradiated vitreous)
IT 12141-40-1, Silicic acid (H4Si5O12), tetrasodium salt
RL: USES (Uses)
(***color*** ***centers*** in x-irradiated vitreous)

L5 ANSWER 96 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1966:469285 CAPLUS
DN 65:69285
OREF 65:12919c-e
ED Entered STN: 22 Apr 2001
TI Ion-ion and ion-solvent interactions
AU Symons, M. C. R.
CS Univ. Leicester, UK
SO (1964) 19 pp.
From: Sci. Tech.Aerospace Rept. 3(12), 1966-7(1965).
DT Report
LA English
CC 6 (Phase Equilibriums, Chemical Equilbriums, and Solutions)
AB Uv absorption spectra of halide ions in soln., charge-transfer-to-solvent spectra, are discussed by using a simple confined model for the electron in the excited state. Similarities between this model and that for the ground state of both solvated electrons and F ***centers*** are noted. Reviewed are properties of solvated electrons in condensed and fluid media as indicated by absorption and electron spin resonance spectra. Aq. alkali-metal hydroxide ***glasses*** after exposure to .GAMMA.-radiation at 77.degree.K. are characterized by an intense absorption band at about 17,000 cm.-1 which is lost on exposure to visible light. Comparison of the electron resonance spectra before and after ***bleaching*** suggests that the blue species is paramagnetic, having a sym. absorption band of width about 14 gauss and a g-factor of 2000. The nature of this species is discussed; it is postulated that the entity is an electron trapped at a hydroxide vacancy. The effect of added halide ion on the electron resonance spectra was examd. A 2nd species, having g = 2.002 and g = 2.07 is discussed in terms of an O- radical perturbed by the medium. Evidence that solvated electrons are strongly confined to cavities in the solvent is summarized; a simple model suggested links the optical properties of solvated electrons to those of F ***centers*** in alkali halide.
IT Ions
(assocn. or interaction of, with ions and solvents)
IT Energy levels
(***color*** ***centers*** and solvated electrons in ground state, ion-ion and ion-solvent interactions in relation to)
IT Alkalies
(***color*** ***centers*** in aq. ***glassy*** , bombarded by .gamma.-rays, solvated electrons and, magnetic resonance absorption in relation to)
IT ***Color*** ***centers***
(in alkali aq. ***glasses*** bombarded by .gamma.-rays, solvated electrons and, and magnetic resonance absorption in relation thereto)
IT Spectra, visible and ultraviolet

(of alkali metal hydroxide aq. ***glasses*** and halides in soln., solvated electron properties in relation to)
IT g-factors
(of ***color*** ***centers*** in .gamma.-irradiated ***glassy*** aq. alkalies, solvated electrons and)
IT Magnetic resonance absorption
(of ***color*** ***centers*** , in .gamma.-irradiated ***glassy*** aq. alkalies, solvated electrons and)
IT Halides
(spectra of aq., solvated electrons and)
IT 768-52-5, Aniline, N-isopropyl-
(ionization of protonated, in nonaq. solvents)
IT 183748-02-9, Electron
(polarons (in soln.), in condensed and fluid media, magnetic resonance absorption in relation to)

L5 ANSWER 97 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1966:42287 CAPLUS
DN 64:42287
OREF 64:7834b-c
ED Entered STN: 22 Apr 2001
TI ***Color*** ***centers*** in aluminoborate ***glass***
AU Ghosh, Amal K.
CS Argonne Natl. Lab., Argonne, IL
SO Journal of Chemical Physics (1966), 44(2), 541-6
CODEN: JCPSA6; ISSN: 0021-9606
DT Journal
LA English
CC 21 (Ceramics)
AB Different types of ***color*** ***centers*** are present in aluminoborate ***glass*** . Some of these are related to impurities, others are possibly due to defects in the ***glass*** structure. Radiation-induced bands at 520 and 340 m.mu. are attributed to hole ***centers*** . The Fe3+ and Pb++ ions present as impurities in a normal melt of aluminoborate ***glass*** act as electron traps, while Fe++ ions and Pb (atoms) present in a reduced ***glass*** act as hole traps. The reduction of Fe3+ ions to Fe++ ions results in decrease of uv absorption around 220 m.mu.. On heating, the irradiated ***glass*** thermoluminescence along with ***bleaching*** of ***color*** ***centers*** were observed and the relation between the 2 processes was investigated. Glow peaks were observed at 60.degree. .+-. 5%, 165.degree. .+-. 10.degree., and 210.degree. .+-. 5.degree.. The high-temp. glow peak is observed only at high .gamma.-ray exposures (.apprx.107 r.).
IT Absorption (of rays or waves)
(by ***glass*** (aluminoborate), Fe and)
IT ***Glass***
(***color*** ***centers*** in aluminoborate)
IT ***Glass***
(elec. cond. of Na silicate, .gamma.-ray effect on)
IT Gamma rays
(***glass*** (Na silicate) bombarded by, elec. cond. of)
IT ***Color*** ***centers***
(in ***glass*** (aluminoborate))
IT Conductivity, electric and(or) Conduction, electric
(of ***glass*** (Na silicate), .gamma.-ray effect on)
IT Radiation and Radiation effects
(on ***glass*** ***color*** ***centers***)
IT 7439-89-6, Iron 7439-92-1, Lead
(in ***glass*** (aluminoborate), ***color*** ***centers*** and)

L5 ANSWER 98 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1966:26922 CAPLUS
DN 64:26922
OREF 64:4906c-e
ED Entered STN: 22 Apr 2001
TI Ionic processes in .gamma.-irradiated organic solids. Recombination luminescence
AU Skelly, David W.; Hamill, William H.
CS Univ. of Notre Dame, Notre Dame, IN
SO Journal of Chemical Physics (1965), 43(10), 3497-502
CODEN: JCPSA6; ISSN: 0021-9606

DT Journal
LA English
CC 32 (Physical Organic Chemistry)
AB Several aromatic hydrocarbons, ketones, and amines phosphoresced when their .gamma.-irradiated dilute solutions in 3-methylpentane were exposed to near-infrared light at 77.degree.K. or were warmed slightly. Triphenylamine (TPA) was examined in some detail. Optical absorption spectroscopy provided evidence for ***color*** ***centers*** tentatively identified as TPA+, TPA-, as well as solvent-trapped electrons (e-). Formation of TPA+ was attributed to transfer of the electron vacancy in the molecular matrix. Infrared ***bleaching*** of e-and TPA- induced phosphorescence of TPA with corresponding decrease of TPA+. Addition of organic halide (e- trap) decreased TPA- and e-, and ethanol (hole trap) decreased TPA+; both decreased phosphorescence which is attributed to ion recombination.
IT Gamma rays
    (bombardment by, of amines, p-benzophenone and aromatic hydrocarbons in org. ***glasses*** , luminescence, phosphorescence and spectra of)
IT ***Color*** ***centers***
    (in amines, p-benzophenone and aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays, luminescence and)
IT Traps
    (in amines, p-benzoquinone or aromatic hydrocarbon in org. ***glasses*** bombarded by .gamma.-rays, luminescence in relation to)
IT Spectra, visible and ultraviolet
    (of amines, benzophenone and aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays)
IT Recombination
    (of electrons and ions, in amines, benzophenone or aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays)
IT Phosphorescence
    (recombination of amines, benzophenone and aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays)
IT Luminescence
    (recombination, of amines and benzophenone aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays)
IT Luminescence
    (recombination, of amines, benzophenone and aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays)
IT 92-52-4, Biphenyl
    (luminescence, phosphorescence and spectrum of, in org. ***glasses*** bombarded by .gamma. rays)
IT 91-20-3, Naphthalene 100-22-1, p-Phenylenediamine, N,N,N',N'-tetramethyl- 119-61-9, Benzophenone 122-39-4, Diphenylamine 124-40-3, Dimethylamine 134-81-6, Benzil 603-34-9, Triphenylamine
    (luminescence, phosphorescence and spectrum of, in org. ***glasses*** bombarded by .gamma.-rays)
IT 183748-02-9, Electron
    (polarons (in solid state), in amines, p-benzophenoneand aromatic hydrocarbons in org. ***glasses*** bombarded by .gamma.-rays, luminescence and)

L5 ANSWER 99 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1965:469964 CAPLUS
DN 63:69964
OREF 63:12819h,12820a-b
ED Entered STN: 22 Apr 2001
TI ***Color*** - ***center*** kinetics in cerium-containing ***glass***
AU Stroud, Jackson S.
CS Corning Glass Works, Corning, NY
SO Journal of Chemical Physics (1965), 43(7), 2442-50
CODEN: JCPSA6; ISSN: 0021-9606
DT Journal
LA English
CC 21 (Ceramics)
AB The formation and thermal ***bleaching*** of radiation-produced ***color*** ***centers*** in cerium-contg. soda-silica ***glass*** are studied to det. the effect of cerium on ***color*** - ***center*** kinetics. The optical absorption changes occurring during and after irradiation with .gamma. and x-rays are measured. The data are fit by equations obtained by integrating a set of reaction-rate equations. These

equations are an approx. description of the following 3 processes that account qual. for the effects of a concn. and oxidn. state: Ce3+, by capturing radiation-produced holes to form Ce3+ + ***centers*** , inhibit formation of all other kinds of ***centers*** due to trapped holes; Ce4+ ions, by capturing electrons to form (Ce4+ + electron) ***centers*** , inhibit formation of all other kinds of ***centers*** due to trapped electrons and inhibit recombination of electrons with trapped holes; after cessation of irradiation, holes are transferred from their traps to Ce3+.

IT Absorption (of rays or waves)
(by ***glass*** , contg. Ce, effect of .gamma.- and x-irradiation on)

IT ***Glass***
(cerium-contg., ***color*** ***center*** formation and ***bleaching*** in)

IT ***Color*** ***centers***
(formation and ***bleaching*** of, in ***glass*** contg. Ce)

IT Gamma rays
(***glass*** contg. Ce bombarded by, ***color*** ***centers*** in)

IT Reaction kinetics and(or) Velocity
(of ***color*** ***center*** formation in Ce-contg. ***glass***)

IT Trapping
(of holes, in Ce-contg. ***glass*** , effect on .gamma.- and x-irradiation on)

IT 183748-02-9, Electron
(capture of, in Ce-contg. ***glass*** , effect of .gamma.- and x-irradiation on)

IT 7440-45-1, Cerium
(in ***glass*** , ***color*** ***center*** formation and ***bleaching*** in relation to)

L5 ANSWER 100 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1965:34325 CAPLUS
DN 62:34325
OREF 62:6052c-d
ED Entered STN: 22 Apr 2001
TI Reversible photochemical ***bleaching*** in frozen aqueous systems at 77.degree.K
AU Moorthy, P. N.; Weiss, J. J.
CS Univ. Newcastle-upon-Tyne, UK
SO Nature (London, United Kingdom) (1964), 204(4960), 776-7
CODEN: NATUAS; ISSN: 0028-0836
DT Journal
LA English
CC 11 (Radiation Chemistry and Photochemistry)
AB When transparent matrixes of ice contg. 1-10 mole % H2SO4 or H3PO4 at .apprx.77.degree.K. are irradiated with ionizing radiation (.gamma.-rays, x-rays) they become colored, deep yellow for H2SO4, and pink for H3PO4. When these colored ***glasses*** are exposed to visible light for several min., the ***color*** disappears. Annealing at about 120.degree.K. in the absence of light restores the ***color*** , which is due to SO42-, which has an absorption max. at 446 m.mu., and HPO42- which shows max. absorption at 525 m.mu..

IT Ice
(***bleaching*** of .gamma.- or x-irradiated, contg. H3PO4 or H2SO4, by visible light)

IT Gamma rays
(ice (H3PO4- and H2SO4-contg.) bombarded by, ***bleaching*** with visible light)

IT X-rays
(ice crystals contg. H3PO4 or H2SO4 bombarded by, ***bleaching*** by visible light)

IT ***Color*** ***centers***
(in ice crystals contg. H3PO4 or H2SO4 (.gamma.- or x-irradiated), ***bleaching*** by visible light)

IT 3744-07-8, Nitrogen fluoride, NF2
(decompn. of, by light)

IT 7664-38-2, Phosphoric acid 7664-93-9, Sulfuric acid
(ice crystals contg., ***bleaching*** of .gamma.- or x-irradiated, by visible light)

L5 ANSWER 101 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1965:2613 CAPLUS
DN 62:2613
OREF 62:417c-g
ED Entered STN: 22 Apr 2001
TI Photochromism of p-phenylenediaminetetraacetic acid absorbed in porous ***glass***
AU Chopoorian, J. A.; Loeffler, K. O.; Marzluff, W. F.; Dorion, G. H.
CS Am. Cyanamid Co., Stamford, CT
SO Nature (London, United Kingdom) (1964), 204(4954), 180-1
CODEN: NATUAS; ISSN: 0028-0836
DT Journal
LA English
CC 32 (Physical Organic Chemistry)
GI For diagram(s), see printed CA Issue.
AB p-Phenylene-diaminetetraacetic acid (I) can be chem. oxidized to the blue radical cation (II). I was converted to II by a novel photochem. manner. Irradiation with a G.E. RS-I Sunlamp at a distance of 12 in. of a 0.005-0.06M aq. or alc. soln. of I absorbed by 2 in. thick porous ***glass*** ("Vycor No. 7930") gave the blue II. On interruption of irradiation the photo-induced coloration rapidly ***bleached*** . The "Vycor No. 7930" was cleaned by washing with H2O and drying at 450.degree. with a slow rate of temp. elevation. At least 15% of the vol. of the ***glass*** contained a continuous network of pores with a 40 A. av. diam. The absorption of the aq. or alc. soln. of I into the ***glass*** was facilitated by evacuating the ***glass*** prior to introducing the soln. Under normal humidity conditions the ***glass*** -I system remained intact for 20 min., after which evapn. of the solvent led to opacification. The ***glass*** -I samples could be stored under solns. of I for several days before noticeable chem. decompn. occurred. Solns. of I were slowly converted to small amts. of II by air, esp. at pH >2. On irradiation of a 0.01M aq. soln. of I absorbed in porous ***glass*** , a change from colorless to blue occurred in 30 sec. The ***color*** change (.lambda.max. 560 m.mu., shoulder 610 m.mu.) was induced by radiation in the 3350-4200 A. region with an activation max. between 3650-3950 A., and ***bleached*** with a half-life of 8 min. The radiation-induced absorption spectrum was identical with that obtained from a soln. of I treated with H2O2. The radical nature of this blue species was confirmed by E.P.R. spectra. The ***bleaching*** reaction followed 1st order kinetics over low concns. of I with kav. = 1.5 .times. 10-3 sec.-1 With more concd. solns. of I the radiation-induced absorption became lower. Two interpretations are given. (1) I may react with uv light to dissociate an electron which is captured by a matrix ***center*** . ***Bleaching*** occurs by electron-radical combination; (2) rather than a reversible reaction, the photoionization of I is followed by radical-radical combination and ***bleaching*** . This implies a gradual consumption of I. The mechanisms are supported by (1) the 1st-order kinetics of the ***bleaching*** reaction, and (2) the lower ***color*** development at higher I concns. indicating the possibility of a self-quenching (radical-radical) mechanism.
IT Photochromy
(of (p-phenylenedinitrilo)tetraacetic acid)
IT Magnetic resonance absorption
(of (p-phenylenedinitrilo)tetraacetic acid radical cations)
IT 1099-02-1, Acetic acid, (p-phenylenedinitrilo)tetra-
(oxidn. of, radical cation formation and)

L5 ANSWER 102 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1964:444988 CAPLUS
DN 61:44988
OREF 61:7810b-c
ED Entered STN: 22 Apr 2001
TI ***Color*** ***centers*** in Na aluminosilicate ***glasses***
AU Karapetyan, G. O.; Stepanov, S. A.; Yudin, D. M.
SO Fizika Tverdogo Tela (Sankt-Peterburg) (1964), 6(5), 1531-9
CODEN: FTVTAC; ISSN: 0367-3294
DT Journal
LA Unavailable
CC 9 (Electric and Magnetic Phenomena)
AB Spectra of electron paramagnetic resonance and addnl. optical absorption of Na aluminosilicate ***glasses*** after .gamma.-irradiation from

60Co were detd. Electron paramagnetic resonance spectra are given for the section 20% Na2O.x% Al2O3.(80 - x)% SiO2. Working models are proposed for formation of traps which explain the exptl. data.

IT ***Glass*** , aluminosilicate
  (***color*** ***centers*** and related properties of)

IT ***Color*** ***centers***
  (in sodium aluminosilicate ***glass***)

IT Spectra, visible and ultraviolet
  (of ***color*** ***centers*** in Na aluminosilicate ***glasses***)

IT Magnetic resonance absorption
  (of ***color*** ***centers*** , in Na aluminosilicate ***glasses***)

IT 7447-40-7, Potassium chloride
  (***color*** ***centers*** in, optical ***bleaching*** of)

IT 1344-00-9, Sodium aluminosilicate
  (***glass*** , ***color*** ***centers*** and related properties of)

L5 ANSWER 103 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1964:438955 CAPLUS

DN 61:38955

OREF 61:6753b-d

ED Entered STN: 22 Apr 2001

TI Thermal stability of ***color*** ***centers*** in a silicate ***glass***

AU Stroud, J. S.

CS Corning Glass Works, Corning, NY

SO Physics and Chemistry of Glasses (1964), 5(3), 71-5
CODEN: PCGLA6; ISSN: 0031-9090

DT Journal

LA Unavailable

CC 21 (Ceramics)

AB cf. CA 58, 1008c. A study of the thermal ***bleaching*** of the ***color*** ***centers*** of optical absorption produced by ultraviolet and x-ray irradiation on a binary silicate ***glass*** showed that between room temp. and 100.degree. the trapped electron ***centers*** , with an absorption max. of 250 m.mu., causing the f1-band and the trapped hole ***centers*** with absorption max. near 620 m.mu. and 440 m.mu., are thermally decompd. to supply some of the electrons that combine with Ce3+ ***centers*** . The trapped electron ***centers*** causing the f2-band with a max. absorption near 230 m.mu. were thermally decompd. at 50 and 100.degree. to supply some of the electrons that recombine with the thermally stable Ce3+ ***centers*** . Approx. one-quarter of the Ce3+ trapped electron ***centers*** and the (Eu3+ plus electron) trapped hole ***center*** absorptions were thermally stable up to 450 and 250.degree., resp. The ***center*** formed by the ***bleaching*** out of the 2 trapped hole ***center*** bands with absorption max. near 440 and 620 m.mu. resulted in an absorption band with a max. near 500 m.mu. that was thermally stable up to 150.degree..

IT ***Glass***
  (***color*** ***centers*** in silicate, thermal ***bleaching*** of)

IT Heat
  (***glass*** ***color*** - ***center*** ***bleaching*** by)

IT Light, ultraviolet
  (***glass*** treated with, ***color*** ***centers*** in, heat effect on)

IT Traps
  (in ***glass*** (irradiated), heat effect on)

IT ***Color*** ***centers***
  (in ***glass*** (silicate), thermal ***bleaching*** of)

IT Spectra, visible and ultraviolet
  (of ***color*** ***centers*** in ***glass*** , heat effect on)

IT 7440-45-1, Cerium 7440-53-1, Europium
  (in ***glass*** (irradiated), heat effect on, ***color*** ***centers*** and)

IT 183748-02-9, Electron
  (trapped, in irradiated ***glass*** , heat effect on)

L5 ANSWER 104 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1964:65541 CAPLUS
DN 60:65541
OREF 60:11523f-h,11524a
ED Entered STN: 22 Apr 2001
TI New approaches in photography
AU Robillard, Jean J.
CS Sanborn Co., Waltham, MA
SO Photographic Science and Engineering (1964), 8(1), 18-34
CODEN: PSENAC; ISSN: 0031-8760
DT Journal
LA Unavailable
CC 11 (Radiation Chemistry and Photochemistry)
AB A classification of existing photographic systems is given and new processes are discussed. A catalyst system described basically comprises 3 parts: a photocond. layer, a source of catalyst, and an image-forming layer capable of a catalyzed chain reaction, e.g. deeompn. of metallic azides or metal-org. compds. Thus, Cu+ is produced by a secondary reaction in the photodissocn. of CuSCN, and the Cu+ catalyzes the deeompn. of the image-forming compd., Na bis(2,3-pentanediono)dinitrocobaltate, to yield metallic Co. A 2nd system consists of a sensitive emulsion made of a dispersion of phosphor and a thermosensitive dye in a dielec. binder placed between 2 plates of a capacitor, one being of Nesa ***glass*** . An image, projected through the Nesa plate, produces local variations of the dielec. const. in the phosphor. A radio-frequency field is applied between the plates of the capacitor, generating heat in the emulsion at a rate depending on the local variation in dielec. const., and the increase in temp. produces a change in ***color*** of the thermosensitive dye. A process based on photoredn. of semiconductor metallic oxides depends on the change in ***color*** in passing from one oxidn. state to another, e.g. CeO2 (white) -CeO (black) and TiO2 (white) - TiO (black). A process based on ***color*** ***centers*** in alkali halides uses a sensitive layer, consisting of a dispersion of the alkali halide powder in Pliolite S-7, which is exposed to x-rays to produce a uniform coloration of F- ***centers*** . On exposure to light in the absorption band, the F- ***centers*** are ***bleached*** . An elec. field is applied to stabilize the remaining F- ***centers*** to form the pos. image.
IT Photography

L5 ANSWER 105 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1963:467839 CAPLUS
DN 59:67839
OREF 59:12481g-h,12482e-f
ED Entered STN: 22 Apr 2001
TI Solvated electrons in alkali ***glasses***
AU Blandamer, M. J.; ShieldS, L.; Symons, M. C. R.
CS Univ. Leicester, UK
SO Nature (London, United Kingdom) (1963), 199(4896), 902-3
CODEN: NATUAS; ISSN: 0028-0836
DT Journal
LA Unavailable
CC 21 (Ceramics)
AB The details of the feature of the electron spin resonance (E.S.R.) absorption spectrum of .gamma.-irradiated aq. NaOH and KOH ***glasses*** at 77.degree.K. attributed to trapped electrons are given in the order of system, g factor (.+-. 0.0005), line width .+-.1.0 gauss: 10M NaOH in H2O, 2.0006, 16.1; 20 M NaOH in H2O, 1.9995, 18.5; 10M KOH in H2O, 2.0005, 11.8; 20M KOH in H2O, 1.9997, 11.6; 10M NaOH in D2O, 2.0007, 6.1; and 10M NaOH in 1:1 (vol.) mixt. H2O and D2O, 2.0009, 11.8. There was no marked variation in the visible spectrum. The band at 17,500 cm.-1 was lost and broad absorption in the near infrared appeared on exposure to visible light. At the same time 1 feature in the complex (E.S.R.) spectrum was lost. By subtracting the (E.S.R.) spectra before and after ***bleaching*** an accurate plot of the absorption of the blue entity could be derived. The line width is greatly reduced on going from H2O to D2O, there is only a small cation dependence of the line width and no sign of hyperfine structure from the cations, and the g factors are independent of cation and close to that of alkali metals in NH3 and amines. This is in good agreement for an F- ***center*** having H2O mols. rather than cations for nearest neighbors, but not with Jortner and Shaft's model (CA 58, 4075b). The other paramagnetie species formed on .gamma.-radiolysis have properties which suggest an O- ***center*** with strong

environmental interaction.
IT ***Glass***
(gamma-irradiation of, ***color*** ***centers*** , solvated electrons and spectra in relation to)
IT Gamma rays
(***glass*** (alkali) bombardment by, ***color*** ***centers*** , solvated electrons and spectra in relation to)
IT ***Color*** ***centers***
(in ***glass*** (alkali), .gamma.-irradiation and)
IT Spectra, infrared
(of ***glass*** (As2O3, As2Se3, As2SeTe2 and As2S3))
IT Magnetic resonance absorption
Spectra, visible and ultraviolet
(of ***glass*** (alkali) after .gamma.-irradiation)
IT ***Glass***
(spectrum of As2O3, As2Se3, As2SeTe2 and As2S3)
IT 1303-33-9, Arsenic sulfide, As2S3
(***glass*** , spectra of)
IT 183748-02-9, Electron
(polarons (in soln.), in alkali ***glasses*** from .gamma.-irradiation)

L5 ANSWER 106 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1961:52909 CAPLUS
DN 55:52909
OREF 55:10135i,10136a
ED Entered STN: 22 Apr 2001
TI Radiation-induced defects in lead silicate ***glass***
AU Barker, R. S.; Richardson, D. A.; McConkey, E. A. G.; Yeadon, R. E.
CS Pilkington Bros. Ltd., St. Helens, UK
SO Nature (London, United Kingdom) (1960), 188, 1181
CODEN: NATUAS; ISSN: 0028-0836
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB The optical d. of .gamma.-irradiated ***glass*** , plotted vs. dose, shows a rapid exponential rise below 106 rads, attributed to electron trapping in existing defect sites, and a slow linear rise up to (at least) 108 rads, attributed to creation of new sites. Pb silicate ***glass*** samples exposed to 108 rads, ***bleached*** by a Hg lamp, and reirradicated with 108 rads, showed greater optical d. after the 2nd irradiation.
IT ***Color***
(***centers*** , in Pb silicate ***glass*** bombarded with .gamma.-rays)
IT ***Glass***
(defects (.gamma.-ray-induced) in lead silicate, and ***color*** - ***center*** formation therein)
IT Gamma rays
(***glass*** (Pb silicate) bombarded by, defects in, and ***color*** ***center*** formation therein)
IT Trapping
(of electrons, in .gamma.-ray-induced defects in Pb silicate ***glass***)
IT 11120-22-2, Lead silicate
(***glasses*** , .gamma.-ray-induced defects in, and ***color*** ***center*** formation therein)

L5 ANSWER 107 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1959:3621 CAPLUS
DN 53:3621
OREF 53:662g-i,663a-e
ED Entered STN: 22 Apr 2001
TI Absorption spectra of silica ***glass*** and quartz crystals containing contaminations by germanium
AU Kats, A.
CS Philips' Gloeilampenfabrieken, Eindhoven, Neth.
SO Verres et Refractaires (1958), 12, 191-205
CODEN: VEREAI; ISSN: 0337-5676
DT Journal
LA Unavailable
CC 19 (Glass, Clay Products, Refractories, and Enameled Metals)

AB cf. Cohen C.A. 51, 12664f. Garino-Canina (C.A. 50, 11109c) discussed the characteristic absorption band .lambda. = 2420 A., indicating the presence of Ge in silica ***glass*** . It corresponds to fluorescence ***centers*** excited by irradiation with .lambda. = 2537 A. light. Highly purified SiO2 ***glass*** does not show these phenomena (C.A. 50, 11827f). K. reexamd. these observations with different com. and synthetic silica ***glasses*** with controlled addns. of GeO2, fully confirming the previous results. A long thermal exposure of a ***glass*** with 10-4 g. Ge/g. at 1160.degree.-1200.degree. makes the 2420-A. absorption practically disappear. Garino-Canina observed the same effect by electrolysis. The absorption, however, reappears if the ***glass*** is fused again above 1400.degree.. This effect is explained by reduction reactions; in pure O the 2420-A. absorption is not restored. K. concludes that O defects in the reduced ***glass*** are the ***color*** and luminescence ***centers*** in question. Irradiation of the ***glass*** causes the appearance of a band at 2620 A. if Ge is present. This band is explained by O defects near Ge with captured electrons. But also Al (perhaps also Fe) is always present in common silica ***glass*** , in concns. of 10-3 to 10-4 which is the cause of an absorption near 3000 A. if irradiated with x-rays (concn. of 105 to 106 r.). The H2O content of ***glass*** fused in O-H or C2H2 flame is indicated by the infrared band at 2.72 .mu. and an absorption developed by the irradiation at 2150 A. This latter band is interpreted as ***centers*** of H+ with captured electrons. The bands at 2620 and 2150 A. are shifted to lower wave lengths (2550 and about 2100 A.) if the absorption is measured not at room temp. but at 78.degree.K. ***Glass*** heat-exposed at 1160.degree. and then irradiated no longer shows any bands at 2950 and 2620 A. but a new band at 2800 A. and a strong one at 5450 A., indicating a total rearrangement around the Ge atoms. Reactor bombardment of Ge-contg. ***glass*** with 1018 neutrons/sq. cm. brings about an absorption curve with the 2150-A. peak, and a weak shoulder effect at 2550 A. corresponding to O defects with captured electrons. In an analogous series of expts. natural and synthetic quartz (with 0.02% Ge and 0.003% Al) was examd. either in its original state or after irradiation (105 to 106 r.) In the original state the crystals show the 2.79-.mu. longitudinal proton oscillation in the OH groups, but after irradiation peaks at 2150 A. (H+ with captured electrons), 2420 A. (O defects around Ge with captured electrons), 2820 A. (Na-Ge ***centers***), and 4500 A. (interstitial Na with captured electrons). Quartz crystals from Madagascar contain interstitial Li and show, therefore, a band at 4150 A. in the place of the 4500-A. band. Paramagnetic resonance measurements (at room temp.) in Ge-contg. quartz (cf. Anderson and Weil, Bull. Amer. Phys. Soc. 3, 135(1958)) show anisotropic-oriented electron effects on Na and Li ions, with 4 lines in the hyperfine structure. At 78.degree.K. a corresponding structure with 6 lines characteristic of Al ***centers*** appears. There is a strong dichroism of the ***color*** ***centers*** in irradiated quartz, as seen from graphs of the dichroitic factor, .pi., as a function of the wave lengths, and for the elec. vectors parallel and perpendicular to the c-axis of the crystals. The absorption peaks are different if the irradiation was applied at room temp., or at 78.degree.K., and if the measurements were made at room temp. or at 78.degree.K. There are, in addn., surprising changes in .pi. as a function of temp. in quartz crystals irradiated at 78.degree.K. and then slowly heated. Above 200.degree.K. there is a rather sudden change which is distinctly indicative for different orientations of the ***color*** ***centers*** for the elec. vectors parallel and perpendicular to c. Ultraviolet irradiation with polarized light (at 78.degree.K., elec. vector parallel c) brings about ***decolorizing*** , i.e., recombination of electrons with the holes (for .lambda. = 2420 and 2550 A.), whereas the inverse effect is observed for ***centers*** causing the 2960-A. band. Anisotropy effects also occur after irradiation with 1018 neutrons/sq. cm.

IT Radiation
(bombardment by, of quartz and SiO2 ***glass*** (Ge-contg.), spectra in relation to)

IT ***Color***
Luminescence
(***centers*** , in Ge-contg. quartz and SiO2 ***glass***)

IT Dichroism
(in irradiated quartz)

IT Huang-Minlon
(in quartz and SiO2 ***glass*** contg. Ge, ***color*** and

luminescence ***centers*** in relation to)
IT Recombination (of electrons and holes)
(in quartz by ultraviolet irradiation)
IT Ultraviolet and visible, spectra
(of quartz and SiO2 ***glass*** contg. Ge)
IT Magnetic resonance absorption
(of quartz, ***color*** ***centers*** and)
IT Infrared spectra
(of water, in fused SiO2, and radiation effect thereon)
IT Ultraviolet light
(quartz ***decolorization*** by)
IT X-rays
(silica (fused) bombarded by, Al spectrum in)
IT 7631-86-9, Silica
(fused or vitreous, spectrum of Ge-contg.)
IT 7429-90-5, Aluminum
(***glass*** (SiO2) contg., spectrum of x-ray bombarded)
IT 7782-44-7, Oxygen
(in quartz and SiO2 ***glass*** contg. Ge, ***color*** and luminescence ***centers*** in relation to)
IT 7439-93-2, Lithium
(in quartz, spectrum of)
IT 12408-02-5, Hydrogen ion
(in silica (Ge-contg.) ***color*** ***centers***)
IT 7732-18-5, Water
(in silica (fused), spectrum of, and radiation effect thereon)
IT 7440-56-4, Germanium
(quartz and SiO2 ***glass*** contg., spectra of)
IT 12586-31-1, Neutron
(silica (Ge-contg.) bombarded by, spectrum of)
IT 14808-60-7, Quartz
(spectrum of, Ge effect on)

L5 ANSWER 108 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1958:63119 CAPLUS
DN 52:63119
OREF 52:11375h-i,11376d-h
ED Entered STN: 22 Apr 2001
TI Effects of radioactive radiations on ***glass***
AU Jahn, Walter
CS Lab. Jenaer Glaswerks. Schott & Gen., Mainz, Germany
SO Glastechnische Berichte (1958), 31, 41-54
CODEN: GLBEAQ; ISSN: 0017-1085
DT Journal
LA Unavailable
CC 19 (Glass, Clay Products, Refractories, and Enameled Metals)
AB Fundamentals are discussed of the theory and the specific action of radiations (.alpha., .beta., .gamma.) from radioactive material, further those of common x-rays and neutron radiation. The interaction of these radiations with absorbing materials (e.g. Pb and ***glass***) by ionization and induction effects are illustrated in the complex absorption characterized by total absorption, Compton effects, photoeffects, and pairings. The specific behavior of ***glass*** to a given dose of radiation is shown for the effects of corpuscular (electron) radiation on phosphate ***glass*** , further for .gamma.-radiation (from a Co60 source) for optical (Ba crown), phosphate, and Pb silicate ***glasses*** . Particularly characteristic is the spontaneous ***bleaching*** observed in the course of time for radiation-discolored ***glasses*** . The parallelism between x- and .gamma.-radiation effects in the visible range is demonstrated; this makes possible the use of x-rays as model radiation for .gamma.-effects. Because of the great importance of the chem. compn. of radiation-protecting ***glasses*** , the author discusses extensively the role of multivalent cations in the discoloring phenomena, especially that of PbO and CeO2, the latter, in amts. of 0.8 to 2.0%, as agent of max. ***color*** -stabilizing effects. Reduction and oxidation reactions, and the formation of different ***color*** ***centers*** are further discussed with special emphasis given to the role of Ce by electron catching, and as a sensitizer for photosensitive Ag ***glasses*** . The practical application of the absorption theory of the radiation effects on ***glass*** is illustrated in methods of dosimetry, and in the development of highly efficient protection windows for nuclear energy reactors. Typical absorption curves for H2O, concrete,

Fe, Al, and Pb show the great efficiency of modern multiple windows with an immersion liquid for the "hot cells." The particular behavior of neutron radiation and the fundamentally different mechanism of neutron dissipation and absorption, e.g. by B10 and Cd113 (which have the highest known cross section values) is applied for the construction of neutron absorbing ***glasses*** on the base of Be-Li borate compns. The addition of Ce is, in this case, to eliminate the "edge effect" caused by .alpha.-particles which are emitted during the capture of neutrons by B and bring about troublesome coloring of the edges and surfaces.

IT Absorption (of rays or waves)
    (by ***glass***)
IT Radiation
    X-rays
    (***glass*** bombarded by)
IT Gamma rays
    (***glass*** bombardment by)
IT Cations
    (in ***glass*** , discoloration and)
IT Discoloration
    (of ***glass*** by radiation)
IT ***Glass***
    (radiation effect on)
IT Nuclear Reactors
    (windows for)
IT Beryllium lithium borate
    Lithium beryllium borate
    (***glass*** from, neutron absorption by)
IT 12586-31-1, Neutron 12587-46-1, Alpha ray 12587-47-2, Beta ray
    (***glass*** bombardment by)
IT 1306-38-3, Cerium oxide, CeO2 1317-36-8, Lead oxide, PbO
    (in ***glass*** , radiation effect on)

L5 ANSWER 109 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1957:7429 CAPLUS
DN 51:7429
OREF 51:1563f-i,1564a
ED Entered STN: 22 Apr 2001
TI Behavior of silica ***glass*** in the ultraviolet range
AU Garino-Canina, V.
SO Verres et refractaires (1956), 10, 151-8
DT Journal
LA Unavailable
CC 19 (Glass, Clay Products, Refractories, and Enameled Metals)
AB cf. C.A. 50, 6188b. The ***color*** changes of natural and synthetic quartz crystals by irradiation with x-rays or radioactive particles (neutron bombardment) are discussed from literature data. They are combined with a typical thermoluminescence. The ***color*** phenomena in fused silica are analogous, but there is a distinct correlation to the conditions of the manufg. process (in reducing or oxidizing surroundings). The absorption coeffs. of discolored silica ***glass*** of type C are much higher than those for V ***glass*** , with rather sharp max. at 2200, 3000, and 5400 A. The latter peak does not appear in V; it is known that such silica ***glasses*** do not show any coloration in the visible range. By exposure of V ***glass*** in Si vapor, or by remelting it at 2000.degree. it is changed to the more sensitive C-type ***glass*** . Thermal exposure of V ***glass*** at 700-1000.degree. does not bring about any changes in the ultraviolet absorption characteristics. For C ***glass*** (molten in contact with graphite), however, serious changes occur by an exposure at those temps. for 2 hrs. to one day, with a satn. state reached after some days. These changes are particularly evident in graphs with the difference of the optical d./cm. of the heated, and of the original ***glass*** sample. The new absorption max. at 2300 and 3000 A. are obvious. The ***color*** ***centers*** in irradiated, and in thermally treated ***glasses*** are evidently much different in stability. Those of the heated samples are not destroyed by a secondary irradiation with Hg .lambda. = 2537 A. while the x-ray and radioactive discolored ***glasses*** are ***decolorized*** in this case. The role of contaminations in the raw materials (Ti, Fe, Al, B, Na) is not sufficiently known, and may be eliminated in future investigations with extremely pure synthetic SiO2 ***glasses*** .
IT X-rays

(bombardment by, of quartz crystals and SiO2 ***glass***)
IT Absorption (of rays or waves)
(by silica ***glass*** (irradiated and non-irradiated) in ultraviolet region)
IT ***Color***
(***centers*** , in quartz bombarded by neutrons and x-rays)
IT Discoloration
(of ***glass*** (silica) by irradiation)
IT Ultraviolet and visible, spectra
(of silica ***glass*** (irradiated and non-irradiated))
IT 12586-31-1, Neutron
(bombardment by, of quartz and SiO2 ***glass*** , ***color*** and)
IT 7631-86-9, Silica
(fused or vitreous, spectrum of, irradiation effect on)
IT 14808-60-7, Quartz
(radiation effect on)

L5 ANSWER 110 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1956:34998 CAPLUS
DN 50:34998
OREF 50:6929a-c
ED Entered STN: 22 Apr 2001
TI ***Color*** ***centers*** in alkali-silicate ***glasses*** containing alkaline earth ions
AU Yokota, Ryosuke
CS Tokyo Shibaura Elec. Co., Kawasaki-shi
SO Physical Review (1956), 101, 522-5
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3 (Electronic Phenomena and Spectra)
AB cf. C.A. 48, 12560b. The alkali metal oxide, alk. earth oxide, silica ***glasses*** 0.6 Na2O.xCaO.2SiO2 (x=0, 0.09, 0.18, 0.27), 0.6-Li2O.xCaO.2SiO2 (x=0, 0.18), 0.6Rb2O.xCaO.2SiO2 (x=0, 0.18), 0.6K2O.0.18MO2SiO2 (M=Mg, Ca, Sr, or Ba), and 2CaO.3SiO2, were prepd., x-irradiated, and studied by spectrophotometry. ***Bleaching*** expts. with visible light were carried out. No effect of alk. earth content on the absorption spectra was detected. Room temp. ***bleaching*** of a K2O.SrO.SiO2 ***glass*** with light of wave length which corresponds to the x-ray induced absorption band at 1.95 e.v., decreased absorption generally but failed to create a new absorption band such as the Z1 band found in KCl, which contains SrCl2, that was irradiated and then ***bleached*** . Comparisons are made with alkali-halide systems which contain alk. earth halides. There are inadequacies in the quasicryst. model of ***glass*** when applied to these ***glasses*** .
IT X-rays
(alkaline-earth-contg. ***glass*** bombarded by, ***color*** ***centers*** in)
IT ***Color*** (s)
(***centers*** , in alkali metal silicate ***glasses*** contg. alk. earth ions)
IT ***Glass***
(***color*** ***centers*** in alkaline earth ion contg.)
IT 7440-39-3, Barium
(***glass*** contg., ***color*** ***centers*** in x-ray irradiated)
IT 7439-95-4, Magnesium 7440-24-6, Strontium
(***glass*** contg., ***color*** ***centers*** in x-ray-irradiated)
IT 7440-70-2, Calcium
(in ***glass*** , ***color*** ***centers*** in x-ray-irradiated)

L5 ANSWER 111 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1956:25800 CAPLUS
DN 50:25800
OREF 50:5253g-i,5254a-b
ED Entered STN: 22 Apr 2001
TI Problems of ***glass*** fining, decoloring, and solarization
AU Simmingskold, B.; Jonsson, B. R.

CS Glass Inst., Vaxjo, Swed.
SO Glasteknisk Tidskrift (1955), 10, 151-9,162-8
CODEN: GLTIAQ; ISSN: 0017-1093
DT Journal
LA Unavailable
CC 19 (Glass, Clay Products, Refractories, and Enameled Metals)
AB cf. C.A. 49, 5796e. Systematic ***glass*** -fining expts. were made by using Na2SO4 and mixes of Na2SO4 and Na2SiF6 as fining agents; further expts. were made on ***decolorizing*** by addns., usually 30-50 g./100 kg. ***glass*** , of Zn and Cd selenite, didymium oxide, As2O3, NaSbO3, and CeO2. The ground ***glass*** contained Na2O 16.8, K2O 0.9, CaO 8.8, SiO2 73.6, and Fe2O3 0.023 .+-. 0.002%. Light-transmittance curves, detd. by a Beckman DU spectrophotometer, are given of ***glass*** samples with a thickness of 100 mm. The tricoloric ***color*** data are plotted in CIE diagrams. The best ***decolorizing*** effects were observed with ***glass*** molten in a slightly oxidizing furnace atm., with stabilizing agents added. A reducing furnace atm. or the absence of stabilizers always brought about a brown or dirty-yellow ***color*** tint of the ***glass*** . Solarization in sunlight for 60 days in an open atm. (2/3 of this time was full sunshine) was detd. by spectrophotometric measurements and by plotting the results in the tricoloric CIE diagrams. The most important changes in ***color*** were observed in ***glass*** contg. As or Sb, with a tendency to develop an equil. tint characterized by the optical " ***center*** of gravity" at .lambda. = 545 m.mu.. CeO2 caused much weaker ***color*** changes, and the final equil. wave lengths were shifted to the ultraviolet. Addns. of PbO to the ***glass*** compn. reduced the intensity of the solarization; above 3% PbO no more solarization was observed even if As was added as a stabilizing agent. The solarization mechanism was chiefly detd. by the removal of one electron from the Fe++ cations to form Fe+++, but this process was strongly governed by foreign cations like As5+ and Sb5+. These elements, even in very low concns., make it practically impossible to produce a pure Na-Ca silicate ***glass*** which would not show any solarization effects.
IT ***Glass***
(***decolorization*** , fining and solarization of)
IT Rare earths
(in ***glass*** ***decolorization***)
IT Light
(transmission of, by ***glass*** , effect of ***decolorization*** and solarization on)
IT Zinc selenites
(in ***glass*** ***decolorization***)
IT 7757-82-6, Sodium sulfate, Na2SO4
(and mixts. with Na2SiF6 in ***glass*** fining)
IT 1327-53-3, Arsenic oxide, As2O3
(***glass*** ***decolorization*** by)
IT 1308-04-9, Cobalt oxide, Co2O3
(***glass*** ***decolorization*** with)
IT 1317-36-8, Lead oxide, PbO 7440-36-0, Antimony 7440-38-2, Arsenic
(***glass*** solarization and)
IT 1306-38-3, Cerium oxide, CeO2 15432-85-6, Sodium antimonate, NaSbO3
(in ***glass*** ***decolorization***)
IT 16893-85-9, Sodium fluosilicate, Na2SiF6
(mixts. with Na2SO4 in ***glass*** fining)

L5 ANSWER 112 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1955:9863 CAPLUS
DN 49:9863
OREF 49:2020i,2021a-d
ED Entered STN: 22 Apr 2001
TI Detecting artificial dyes in red wines
AU Salati, Wainer
CS Ist. enol., Alba, Italy
SO Riv. viticolt. e enol. (Conegliano) (1954), 7, 259-68
DT Journal
LA Unavailable
CC 16 (The Fermentation Industries)
AB Warm 50 cc. wine in a 400-cc. ***glass*** , add 4 cc. 10% HCl, 3 m. degreased white wool yarn, and boil for 3 min. Remove the yarn from the wine residue (I), wash the yarn with H2O and boil it for one min. with 20 cc. H2O and 10 drops concd. ammonia. Remove the yarn, continue to boil

until the odor of ammonia ceases, cool, then pour into a separatory funnel, add 3 cc. HCl (1:1) and 5 cc. iso-AmOH, shake, let stand, and sep. the aq. phase (II). If this is red, acid fuchsin was in the wine (confirm this by concg. II to a few ml. and dropping 1 cc., little by little, on one point of a warmed filter paper, to obtain a spot of 3 cm. diam. whose border will be decisively red). To detect other acid dyes, wash the amyl phase 2 times with H2O, add 4 cc. H2O and 15 cc. petr. ether, shake to ***decolorization*** of the ether amyl layer, sep. the aq. (colored) phase (III) contg. a possible ppt. (add a drop concd. ammonia and 5 cc. H2O, without shaking, in the separatory funnel, to remove a possible ppt.). Boil III for 10 sec., add 10 drops 10% HCl and 5 cm. white wool yarn (IV). Boil for 10 sec., take out the yarn, and wash it with H2O. The fact that it is colored pink or red reveals the presence of acid dyes; genuine wines give just a yellowish ***color*** . To detect basic dyes, put 25 cc. I into a separatory funnel, add 5 cc. concd. ammonia, shake, add 5 cc. iso-AmOH, shake for 20 sec., leave for 5 min., sep. the lower phase, wash the amyl phase 3 times with H2O, add 2 cc. dil. AcOH and 15 cc. petr. ether, shake to ***decolorization*** of the amyl layer, sep. and conc. the colored phase, drop 0.5 cc. on filter paper (as said for acid fuchsin) to form a spot of 3 cm. diam. Dry this paper. Allow some EtOH to be absorbed by the ***center*** of the spot: artificial basic dyes will be dissolved and removed to the border of the alc. spot. Acid dyes can be confirmed by treating IV by 2 drops ammonia and 1 cc. H2O, boiling (taking out the yarn), drying, adding 1 drop ammonia, forming a half-cm. spot on chromatographic paper and making a chromatogram (BuOH, AcOH, and H2O, resp. 4:1:5 as solvent): artificial dyes will give a rising red spot, genuine wine dyes a blue-violet trail. Basic dyes are confirmed by a similar chromatographic method, in which a concd. aq. soln. of the iso-AmOH-ammonia-extd. dyes is used.

IT Dyes
(detection in urine)

IT Wine
(dye detection in)

IT 3244-88-0, Acid Fuchsin
(detection of, in red wine)

L5 ANSWER 113 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1954:70781 CAPLUS

DN 48:70781

OREF 48:12560b-d

ED Entered STN: 22 Apr 2001

TI ***Color*** ***centers*** in alkali silicate and borate ***glasses***

AU Yokota, Ryosuke

CS Tokyo-Shibaura Elec. Co., Kawasakishi

SO Physical Review (1954), 95, 1145-8
CODEN: PHRVAO; ISSN: 0031-899X

DT Journal

LA Unavailable

CC 3 (Electronic Phenomena and Spectra)

AB cf. C.A. 45, 2641h; 46, 5283e; 48, 6837h. The ***color*** ***centers*** induced by x-irradiation in the alkali silicate and borate ***glasses*** and the mixed alkali ***glasses*** are studied. By prepg. samples of various compns. in the reducing and in the oxidizing condition, and by optical and thermal ***bleaching*** , it was found that the visible band is due to electrons trapped by O vacancies adjacent to alkali ions and that the ultraviolet band is due to pos. holes trapped by alkali ion vacancies neighboring O ions. Reduced absorption coeffs. are shown, 1-5 e.v., for Li2O.2SiO2, nNa2O.2SiO2 (n = 1.4, 1.2, 1.1, 1.0, 0.8, 0.7), K2O.2SiO2, Rb2O.2SiO2, Li2O.2B2O3, Na2O.2B2O3, K2O.2B2O3, Rb2O.2B2O3, and mNa2O.nK2O.2SiO2 and mNa2O.nK2O.2B2O3, where m,n = 0.75, 0.25; 0.5, 0.5; and 0.25, 0.75.

IT X-rays
(alkali silicate and borate ***glasses*** bombarded by, ***color*** ***centers*** in)

IT ***Color*** (s)
(***centers*** , in alkali metal silicate and borate ***glasses***)

IT ***Glass***
(***color*** ***centers*** in alkali silicate and borate, produced by x-rays)

IT Sodium potassium borates

(***color*** ***centers*** in ***glass*** of)
IT Potassium sodium borates
(***glass*** of, ***color*** ***centers*** in)
IT 1344-09-8, Sodium silicates 13568-46-2, Lithium silicate, Li2Si2O5 13637-97-3, Potassium silicate, K2Si2O5 18653-81-1, Rubidium silicate, Rb2Si2O5 37328-88-4, Potassium sodium silicate
(***color*** ***centers*** in ***glass*** contg.)
IT 1332-77-0, Potassium borate, K2B4O7 12007-60-2, Lithium borate, Li2B4O7 12007-65-7, Rubidium borate, Rb2B4O7
(***glass*** of, ***color*** ***centers*** in)
IT 1303-96-4, Borax
(***glass*** , ***color*** ***centers*** in)

L5 ANSWER 114 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1954:67403 CAPLUS
DN 48:67403
OREF 48:11931b-d
ED Entered STN: 22 Apr 2001
TI Low-temperature ***bleaching*** and restoration of ***color*** ***centers***
AU Halperin, A.; Garlick, G. F. J.
CS Univ. Birmingham, UK
SO Physical Review (1954), 95, 1098-9
CODEN: PHRVAO; ISSN: 0031-899X
DT Journal
LA Unavailable
CC 3 (Electronic Phenomena and Spectra)
AB Hesketh and Schneider (C.A. 48, 7440c) have reported a large-scale restoration of F ***centers*** in KCl on warming in the dark after ***bleaching*** at 113.degree.K. by irradiation in the F band. Similar effects were obtained in CdS, other crystals, and ***glass*** . The intensity and form of the absorption-temp. curves are dependent on the rate of heating, the vacuum, and the previous treatment of the specimen. Peaks obtained with CdS and KCl near 250.degree.K. are due to interference effects from condensed surface films on the crystals. The crystals act as efficient vapor traps as they lag behind their surroundings during warming. Dry air in the cryostat reduces the effect. The introduction of known vapors produces peaks at temps. specific to each vapor and related to its b.p. The thermal ***bleaching*** curve for KCl colored by x-irradiation at low temps. is shown. Except for the interference peaks, the form of the curve is that expected from the thermal stability of F ***centers*** in KCl.
IT ***Color*** (s)
(***centers*** , low-temp. ***bleaching*** and restoration of)
IT ***Glass***
(***color*** ***centers*** in, ***bleaching*** and restoring of)
IT 1306-23-6, Cadmium sulfide 7447-40-7, Potassium chloride
(***color*** ***centers*** in, ***bleaching*** and restoring of)

L5 ANSWER 115 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1952:54033 CAPLUS
DN 46:54033
OREF 46:8988h-i,8989a
ED Entered STN: 22 Apr 2001
TI Irradiation of natural colored rock-salt crystals with .alpha.-particles from radium F
AU Wieninger, Leopold
CS Univ. Vienna
SO Osterr. Akad. Wiss., Math.-naturw. Klasse, Sitzber. Abt. IIa (1950), 159, 113-28
DT Journal
LA Unavailable
CC 3A (Nuclear Phenomena)
AB The work previously described (C.A. 46, 8527d) is extended to colored crystals from various sources, and contg. colloidal Na. In all cases irradiation produces more F- ***centers*** than in corresponding colorless control specimens. This excess may be related to a greater disorder in specimens contg. colloidal Na. When the colloid content is especially high, irradiation appears to reduce the particle size. Differences between crystals from different sources are emphasized.

IT ***Color*** (s)
(***centers*** , in NaCl bombarded by .alpha.-rays)
IT Atomic nuclei
(neutron-bombarded, in colored ***glass*** , ***decolorization*** by)
IT 12587-46-1, Alpha ray
(sodium chloride bombarded by)
IT 14762-51-7, Sodium chloride (NaCl), rock salt
(.alpha.-ray bombardment of colored)

L5 ANSWER 116 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1947:467 CAPLUS
DN 41:467
OREF 41:52d-i,53a-f
ED Entered STN: 22 Apr 2001
TI Spot tests for the detection of alloying elements in aluminum- and magnesium-base alloys
AU Evans, B. S.; Higgs, D. G.
CS Armament Research Dept., Woolwich, London
SO Analyst (1946), 71, 464-74
DT Journal
LA Unavailable
CC 7 (Analytical Chemistry)
AB Spot tests are described for Cu, Mg, Zn, Mn, Sn, Fe, Ni, Ti, Sb, Bi, Pb, and Cr in com. Al. Only in the tests for Fe, Ti, Sb, Pb, and Cr is it necessary to remove the test drop from the surface of the metal. To test for Cu, place a drop of 20% NaOH on the clean surface and after 5 min. wash off the drop with water and dry with acetone wash. Add 2 drops of a mixt. of 10 vols. satd. soln. of .alpha.-benzoin monoxime in EtOH + 20 vol. of 7.5 N NH4OH + 5 vols. 50% citric acid soln. After 5 min. look for a dirty-green ppt. To test for Mg, place 2 drops of satd. Br aq. on the clean surface and leave until ***decolorized*** . Then add 2 drops of 0.02% quinalizarin in 5% Na2CO3 soln. (freshly prepd.) and stir with a pointed ***glass*** rod. Look for a blue ppt. but disregard a mauve coloration. To test for Zn, allow a drop of 5% NaOH to react for 5 min., then add a mixt. of equal parts 20% NH4Cl and 4% KI solns., stir and leave for 1 min. Add 3 drops of a freshly prepd. buffer soln. (3 vols. pure pyridine + 15 vol. water + 20 ml. concd. HNO3 which has been boiled and cooled) and with 3 drops of 1.5% diphenylcarbazone soln. in EtOH. Look for a violet ppt. and disregard any salmon-pink ***color*** or a slowly forming powdery purple ppt. (Cu). To test for Mn, spot with 1 drop of 20% NaOH, wash with water and dry with acetone. Add a little NaBiO3. Look for a purple ***color*** . To test for Sn, spot with 1 drop of a reagent prepd. from 1 vol. sirupy H3PO4 + 2 vol. of 9 N H2SO4 + 2 vols. of 10% K3Co(CN)6 soln. Look for a yellow ppt. On drying, the spot usually becomes black. To test for Fe, allow 1 drop of 20% NaOH to react for 5 min. on the clean surface. Wash with water and dry with Me2O. Add 2 drops of 1.2 N HCl and leave for 1-2 min. Transfer to a porcelain spot plate, add 3 drops of 20 vol. H2O2 and 3 drops of 10% NH4CNS soln. Less than 0.1% of Fe can be detected by the red or pink ***color*** . To test for Ni, allow 1 drop of 20% NaOH to react for 5 min. Rinse with water, dry with Me2O and add 4 drops of reagent prepd. from 2 vols. of 50% citric acid soln. + 2 vols. 5% H3PO4 + 2 vols. 6 N HNO3. After 10 min. add 6 drops of a mixt. of 2 vols. 7.5 N NH4OH + 1 vol. of satd. dimethylglyoxime in EtOH. As little as 0.2% Ni will give the red ppt. To test for Ti, spot with 2 drops of 20% NaOH, and after 5 min. wash with water and Me2O. Add 2 drops of 5% HCl which is satd. with Br2. When ***decolorized*** , transfer the liquid to a clean plate of mild steel. Add to it 2 drops of 5% chromotropic acid in 10% HCl + 2 drops of 5% SnCl2 in 10% HCl. Look for a reddish brown coloration which will be obtained with 0.05% Ti. To test for Sb, treat with 20% NaOH as with Ti. After washing and drying add 4-6 drops of reagent prepd. from equal parts 50% citric acid soln. and satd. Br in water. When the red ***color*** disappears quickly transfer to a tall 60-ml. beaker and add 10 ml. of 1.2 N HCl + 0.5 g. of NaHPO2. Drop a piece of Cu foil (cleaned with HNO3) into the soln., and slowly boil until salts begin to crystallize, cool, and dil. with cold water. Look for a purple coloration which will be obtained with an alloy contg. 0.05% Sb. To test for Bi, place a drop of 10% KCN soln. which has been mixed with an equal vol. of 10% NaOH on the clean alloy. Wash, dry with Me2O, and add 2 drops of reagent prepd. with 6 N HNO3 + equal vols. of 10% K3Co(CN)6 and 10% urea. Add 2 drops of a mixt. of equal parts 4% KI and 1% antipyrine in water. Look for an orange

ppt.; add 1 drop of 10% KCN if Cu forms a brown ppt. To test for Pb, add 20% NaOH soln. and leave for 5 min. Wash with water and dry with Me2O. Soak a piece of filter paper in a mixt. of equal parts AcOH and 10% CrO3 and touch to the prepd. surface of the alloy. Spread out the paper to remove air bubbles and press down a thin sheet of ***glass*** on the paper, which is supported on a wad of dry filter paper. Strip off the paper and transfer to a beaker contg. 10% AcOH. After all CrO3 appears to be dissolved, transfer to another beaker and wash with running water. Transfer to a beaker contg. 9 vols. of 1% KCN + 1 vol. of 0.1% soln. of dithizone in CHCl3. After 15 min. wash with water, drain, and dry. Red spots on a white background will appear if Pb is present. To test for Cr, place 2 drops of a mixt. of equal parts concd. HCl and 20 vol. H2O2 on the cleaned surface. Wash with 2 drops of water to a small clean watch ***glass*** . Add 6 drops of 20% NaOH mixed with an equal vol. of 20 vols. H2O2, stir, and leave for 2-3 min. Transfer to the ***center*** of a disk of filter paper and add drops of a reagent prepd. from equal vols. of 9 N H2SO4 + 1% diphenylcarbazide in glycerol + 10% (NH4)2HPO4 + glacial AcOH. Purple bands develop if Cr is present. Similar tests are described for Mg-base alloys for detecting Al, Mn, Zn, Cu, Sb, and Cd. The Al test is based on the reaction with Alizarin S soln., the Mn test upon the formation of MnO4-, the Zn test on the diphenylcarbazone reaction, the Cu test on the reaction with .alpha.-benzoin-monoxime, the Sb test is similar to that described above and the Cd test is based on the formation of yellow CdS after suitable treatment to avoid interference.

IT 7429-90-5, Aluminum
 (alloys, analysis of, by spot tests)

IT 7439-95-4, Magnesium
 (alloys, analysis of, spot tests in)

IT 7440-02-0, Nickel
 (analysis of, detection in Al alloys)

IT 7439-89-6, Iron 7439-92-1, Lead 7440-31-5, Tin 7440-32-6, Titanium 7440-47-3, Chromium 7440-69-9, Bismuth
 (analysis, detection in Al alloys)

IT 7439-95-4, Magnesium
 (analysis, detection in Al and Al alloys)

IT 7439-96-5, Manganese 7440-36-0, Antimony 7440-50-8, Copper 7440-66-6, Zinc
 (analysis, detection in Al and Mg alloys)

IT 7440-43-9, Cadmium
 (analysis, detection in Mg alloys)

IT 7429-90-5, Aluminum
 (analysis, spot tests in, and detection in Mg alloys)

L5 ANSWER 117 OF 124 CAPLUS

AN 1946:6528 CAPLUS
DN 40:6528
OREF 40:1114b-i,1115a
ED Entered STN: 16 Dec 2001

TI Sorting metals and alloys by means of drop reactions

AU Nikitina, E. I.

SO Zavodskaya Laboratoriya (1945), 11, 231-4
 CODEN: ZVDLAU; ISSN: 0321-4265
DT Journal
LA Unavailable
CC 7 (Analytical Chemistry)

AB A method for rapid recognition of a large no. of Al and Mg alloys, bronzes, brasses, and steels is based on the fact that a ***color*** drop reaction characteristic for the element detg. the grade is selected for each alloy. Drop reactions for Si are used to sort silumin from the duralumin groups and from other alloys. The analyses are made directly on the samples without taking shavings for the analysis. The time required for the analysis varies from several sec. to 15 min. Al alloys are recognized with base (abundant formation of bubbles after 2-5 min.). Addn. of a drop of Fe2(SO4)3 to Mg alloys results in a violent reaction after 1 min. and formation of a yellow-brown ppt. after 2-5 min. Steel contg. Mo is recognized by keeping 2 drops of HCl (1:1) + HNO3 (1:3) on the surface of the metal for 5-10 min., transferring the soln. to a porcelain crucible, evapg. it to dryness, dissolving the dry ppt. by heating in 6 drops of H2SO4, adding SnCl2 until ***decolorized*** (0.5 ml.) and 10 drops of NH4CNS. In the presence of up to 0.1% of Mo a red ***color*** appears. Cr in steel is detected with benzidine. Place 3 drops of aqua regia on the surface of the sample, after 5-10 min. remove

the acid to a watch ***glass*** , neutralize with Na2O2, adding an excess to a strongly alk. reaction, mix, place a drop of the soln. on filter paper (CrO4-- is absorbed by the paper) and 2 drops of benzidine acetate. A blue ring is formed in the presence of Cr. To det. V in steel keep 3-5 drops of a mixt. consisting of HCl 1 part and HNO3 3 parts for 5-10 min. on the surface of the sample, remove the soln. to a porcelain crucible, and 10 drops of HNO3, boil, evap. to a vol. of 3-4 drops (the black particles dissolve and the soln. becomes colorless). Place a drop of aq. aniline-HCl in the ***center*** of a filter paper and add dropwise the soln. from the crucible and 2 drops of aniline on the filter paper. A blue-green ***color*** appears immediately if large quantities of V are present; if small quantities are present the ***color*** appears only after the filter paper dries. Heavy nonferrous metals are detected by placing on the sample 1 drop of HNO3 and 2-3 drops of NH4OH. A blue ***color*** indicates that the alloy is bronze or brass and a white ***color*** that it is babbitt. Elektron (contg. 8-10% of Al) is recognized by the reaction for Al. Metallic Al, the alloy AMts, and magnalium differ from a no. of the alloys of duralumin and silumin by their content of Cu and Si. In the first 3 alloys the contents of Cu and Si do not exceed 0.2%. The method is based on the soln. of the alloy in base, resulting in the sepn. of Cu and Si in the form of a black ppt. Magnalium is recognized from primary Al and the AMts alloy by the reaction of Mg with Ti yellow, resulting in a pink ppt. in alk. soln. The AMts alloy (contg. 1-1.6% of Mg) is recognized by the reaction with HNO3 (1:2), AgNO3, and (NH4)2S2O8, resulting in a pink ***color*** of HMnO4. Silumin is distinguished from other Al alloys by the sepn. of metallic Si on dissolving silumin with HCl (1:1) + HNO3 (3:1). The various silumin alloys differ by their content of Cu (alloys AL-4, AL-2, and AL-9 contain no more than 0.3% of Cu) and of Ni (alloys AL-1 and AL-14). Those contg. Cu are recognized by the reaction with benzoin oxime, forming a bright-green ***color*** with Cu in NH4OH soln., and those contg. Ni by their reaction with dimethylglyoxime, forming with Ni salts in neutral or NH4OH soln. an insol. red salt. Bronze is distinguished from the BAZhM alloy by the reaction for Mn with HNO3, AgNO3, and (NH4)2S2O8.

IT Electron metals
    (identification of, by drop reactions)
IT Alloys
    (sorting, by drop reactions)
IT Analysis
    (spot tests or drop reactions)
IT 7429-90-5, Aluminum
    (alloys, identification of constituents of)
IT 7439-95-4, Magnesium
    (alloys, sorting of, drop reactions in)
IT 7429-90-5, Aluminum
    (analysis, detection by drop reactions)
IT 7439-98-7, Molybdenum 7440-47-3, Chromium
    (analysis, detection in steels)
IT 7439-89-6, Iron
    (analysis, detection, drop reactions for)
IT 7440-62-2, Vanadium
    (analysis, detn. in steels)
IT 12672-06-9, Babbitt metal
    (identification of, by drop reactions)
IT 11122-25-1, Zinc, aluminum-Cu-
    (recognition of TsAM)
IT 147413-41-0, Magnalium
    (recognition of, by drop reactions)
IT 12597-70-5, Bronze 12597-71-6, Brass 56802-58-5, Duralumin
    (recognition of, drop reactions in)
IT 93228-98-9, Silumin
    (sorting, from Duralumin groups, etc., drop reactions in)

L5 ANSWER 118 OF 124 CAPLUS
AN 1945:14620 CAPLUS
DN 39:14620
OREF 39:2265d-i,2266a-f
ED Entered STN: 16 Dec 2001
TI Spot tests for the detection of alloying elements in steel
AU Evans, B. S.; Higgs, D. G.
SO Analyst (1945), 70, 75-82

DT Journal
LA Unavailable
CC 7 (Analytical Chemistry)

AB The original intention was to discriminate rapidly between plain C-steel, alloy steel and highly alloyed steel, but as the work progressed it was found possible to detect Ni, Cr, Mn, Mo, W, Al, Cu, Pb, Ti, Se, and V. For each test the surface must be cleaned well with emery paper, and in the test for Pb further treatment is necessary. To detect Ni, add 1 drop of Br aq. and wait for ***decolorization*** . Add 4 drops of reagent prepd. by mixing 1 vol. of 6 N HNO3 with 2 vol. of 50% H3PO4 and 2 vols. of dil. H3PO4 (5 vol. of sirupy acid in 100 ml.). After 10 min. add 6 drops of dimethylglyoxime reagent (2 vol. 7.5 N NH4OH + 1 vol. of satd. dimethylglyoxime in EtOH) and stir. To detect Cr, place 2 drops of a mixt. of equal parts concd. HCl and 20 vol. H2O2 on the steel surface and wait 10 min.; a green coloration indicates Cr. Transfer the drop to a watch ***glass*** and add 3-4 drops of a mixt. of equal parts 20% NaOH and 20 vol. H2O2. After 1 min. transfer the drop to a close-grained filter paper on the open mouth of a beaker and around the circumference of the spot add a succession of drops of 1% diphenyl carbazide in glacial AcOH mixed with an equal vol. of 9 N H2SO4; a purple ***color*** develops where the reagent penetrates into the steel soln. To detect Mn, add 1 drop of satd. Br aq. and wait for ***decolorization*** . Add 2 drops of 6 N HNO3 and leave for 2-4 min. Remove the drop to a white tile, add a little NaBiO3 and look for a violet ***color*** . To detect Mo, run 4 drops of 2.5% K ethylxanthate onto a filter paper disk and allow to spread. Place 2 drops of satd. Br in concd. HCl on the surface of the steel and wait until ***decolorized*** . Add 3 drops of distd. water and transfer to the ***center*** of the treated filter. A pink ***color*** denotes Mo. To test for W, place a drop of satd. Br aq. on the surface of the steel. When ***decolorized*** quite dry, add 2 drops of a mixt. of equal parts 9 N H2SO4 and a satd. soln. of (NH4)2S2O8 and oxalic acid, stir and allow to evap. When nearly dry, a blue band on the outer edges of the drop denotes W. This test does not succeed with 18:8 austenitic steels. In this case, after thorough polishing with emery cloth, add at once a drop of 5% HCl and drop into the ***center*** of the spot about 15 mg. of a mixt. of equal parts oxalic acid and KMnO4; a dark greenish blue line denotes W. To test for Al, prep. a test paper by adding to it 1 ml. of 0.1% soln. of aurin tricarboxylic acid in EtOH and allowing to dry. Place a drop of satd. Br in concd. HCl on the surface of the steel which has been freshly cleaned and allow it to ***decolorize*** . Run in 4 drops of 20% NaOH with stirring until the Fe+++ becomes ***decolorized*** , then add 4 drops of 10% KCN soln. and stir. Transfer to the test paper but do not add a drop until the preceding one has disappeared. When the last drop has been absorbed, lay the paper flat on a white porcelain tile and cover with a paper which has been soaked in 10% KCN soln. and allowed to dry. After a few sec. strip off the upper paper and transfer the other one to the top of an open beaker and let stand 15 min. Wash the paper about 6 times with 3-4 drops of 20% NH4Cl soln. and allow to spread. Finally dip the paper in Me2CO, shake off the excess and allow to dry. Look for a scarlet ring to detect Al. To detect Cu use successive treatments with a mixt. of equal parts of 10% (NH4)2S2O8 soln. and 1.5 N NH4OH, acetone, and a reagent prepd. from 10 vols. of satd. .alpha.-benzoin monoxime in EtOH, 20 vols. of 7.5 N NH4OH and 5 vols. of 50% citric acid soln. Cu is indicated by a dirty-green spot. To detect Pb, the emery-polished surface must first be etched with 6 N HNO3, washed, and drained. Cover this with a filter soaked with a mixt. of concd. AcOH and an equal vol. of 10% CrO3. After pressing down well, wash the paper and transfer it to a beaker contg. 10% AcOH. When the Fe seems to be dissolved, wash the paper in running water and place it in a freshly prepd. soln. of 0.1% dithizone in CHCl3 mixed with 10 times as much 1% KCN; red spots denote Pb. To detect Ti successive treatments with satd. Br in concd. HCl, a 5% soln. of the Na salt of chromotropic acid and SnCl2 serve to produce a crimson ring. To detect Co, treatments with a 1% soln. of .alpha.-nitroso-.beta.-naphthol in 5 times as much concd. AcOH will give a red ppt. if 1% Co is present. As little as 0.06% Co can be detected if the steel surface is treated for 10 min. with 1 drop of 10% (NH4)2S2O8 soln., the drop is transferred to filter paper and then treated with the reagent. To detect Se, treat the well-polished specimen with a drop of 5% HCl satd. with Br; look for a fine scarlet ppt. To detect V, a rather complicated procedure is described in which the reagents are aqua regia, 20% NaOH, satd. KCN soln. mixed with an equal vol. of 10% K2Co(CN)6, 2% KCN soln., 20% NH4Cl soln.,

1.5% diphenylcarbazone soln. in EtOH mixed with 4 times as much pyridine buffer and EtOH. The results obtained when these tests were applied to 104 specimens of steel are tabulated.

IT 7439-89-6, Iron
(analysis, by spot tests)

IT 7439-92-1, Lead 7439-96-5, Manganese 7440-02-0, Nickel 7440-32-6, Titanium 7440-33-7, Tungsten 7440-50-8, Copper 7440-62-2, Vanadium
(analysis, detection in steel)

IT 7429-90-5, Aluminum 7439-98-7, Molybdenum 7440-47-3, Chromium
(analysis, detection in steels)

IT 7723-14-0, Phosphorous
(analysis, detn. in steels)

IT 7439-89-6, Iron
(analysis, detn. of P)

IT 7782-49-2, Selenium
(detection in steel)

L5 ANSWER 119 OF 124 CAPLUS

AN 1941:51510 CAPLUS
DN 35:51510
OREF 35:7952f-i,7953a-i,7954a-i,7955a-c
ED Entered STN: 16 Dec 2001

TI Magnetic investigations on organic substances. XX. New true carbon biradicals with "free valences" in the p-positions

AU Muller, Eugen; Tietz, Eberhard

SO Ber. (1941), 74B, 807-24
DT Journal
LA Unavailable
CC 10 (Organic Chemistry)

GI For diagram(s), see printed CA Issue.

AB cf. C. A. 35, 6166.3. The prepn. of the 1st true C biradical with "free valences" in the p-described (C. A. 34, 5329.8). The existence of this true biradical is made possible by the 4-fold substitution at the o-positions of the biphenyl system which prevents a coplanar position of the system and hence the possibility of the formation of a quinoid form. Its discovery also pointed the way to the prepn. of a completely free, monomeric C biradical. From the experience of Schlenk (C. A. 4, 2122) in the field of radical chemistry, it should be possible, by introducing in the end diarylmethyl groups residues favoring dissocn. sufficiently strongly, to effect a material increase in the degree of dissocn. and finally obtain a fully monomeric C biradical. Furthermore, in such compds., existing largely in the free radical form, all the uncertainties in the calcn. of the magnetism resulting from a complex assocn. play no or only a very insignificant role. If they are true, practically monomeric biradicals it should be possible to demonstrate in them, by magnetic means, 2 Bohr magnetons (2.sqroot.3 = 2 .times. 1.73), corresponding to a para-susceptibility of xp = 2 .times. 1270 .times. 10-6 for T = 293.degree.. This object, for which the authors have striven for years, has now been practically attained by the synthesis of an atropisomeric biphenyl compd. with xenyl groups on the p-C atoms, viz., 2,6,2',6'-tetrachloro-4,4'-bis(dixenylmethyl)biphenyl (I). 3,5,4-Cl2(H2N)C6H2CO2H, m. 291.degree., obtained in 15% yield from p-H2NC6H4CO2H, NaOAc and KClO3 in AcOH at about 5.degree. treated dropwise with concd. HCl, gave with CH2N2 in acetone 95% of the Me ester, sublimes 90-100.degree. in a high vacuum, m. 98.degree.; this on diazotization and treatment with KI gave 64% of the 4-I ester, sublimes 100-10.degree. in a high vacuum, m. 98.degree., which with Cu powder (Naturkupfer C purified in N) in a sealed tube at 280.degree. yielded 40% di-Me 2,6,2',6'-tetrachloro-4,4'-biphenyldicarboxylate (II), sublimes about 130.degree. in a high vacuum, m. 152.degree.. (If Naturkupfer C reduced in H at 250-300.degree. is used, the H retained by the Cu partially reduces the I compd. to 3,5-Cl2C6H3CO2Me and decreases the yield of II.) Purification of the carbinol corresponding to I, obtained by treating II in benzene with the calcd. amt. of PhC6H4Li, presented considerable difficulties. The honey-yellow ***glassy*** product, which showed deep blue halochromism with concd. H2SO4, yielded only after standing for months in benzene-ligroin a small amt. (about 16.5%) of a cryst., analytically pure substance, m. 248-9.degree.. Short warming in benzene with SOCl2 gave almost quantitatively the dichloride, m. 295-6.degree., from which the 2 end Cl atoms were removed with Naturkupfer C or mol. Ag. The originally colorless benzene soln. became so intensely deep dark brown that an approx. 3-mm. layer was almost opaque. The I is very sensitive to

air, which immediately ***decolorizes*** the soln. on shaking. Petr. ether ppts. from the brown benzene soln. light flesh-colored flocks, m. 180-2.degree. (once, from a 2.5% benzene soln., were obtained red-brown crystals with metallic surface luster). The peroxide, pptd. by petr. ether from the soln. ***decolorized*** with air, light yellow, m. 155-6.degree., does not liberate I from acidified KI soln. Magnetic measurements on the solid I gave a diamagnetism value differing but slightly (within 60 .+-. 20 .times. 10-6) from the value calcd. from the Pascal increments. Not too much weight must be given to this slight difference. Even the dichloride shows a slight deviation (33 .+-. 20 .times. 10-6) from the calcd. value. It is very questionable whether in these complex compds. the Pascal increments used for the calcns. hold strictly. Contrary to other authors (Theilacker and Ozegowski, C. A. 34, 2830.9), M. and T. believe there is no justification for taking the slight ***color*** of the solid as an indication of a possible biradical content. From their measurements they conclude that the solid is diamagnetic, within the limits of their exptl. error, and contains no biradical. In soln., the picture is entirely different. The deep dark red-brown soln. is strongly paramagnetic and I is therefore certainly a true C biradical. The paramagnetism of an approx. 2% benzene soln. reaches a value x.rho./2 = 1000 .times. 10-6, already very close to the value 1270 .times. 10-6 expected for a completely free biradical. If an equil., dimer (diamagnetic) .dblarw. 2 radicals (paramagnetic), analogous to the C2Ph6 equil., is taken as the basis for calcg. the biradical content of these substances, the free radical content of a 1.9% soln. of I is 73 .+-. 7% at 20.degree. and 80 .+-. 8% at 80.degree.. To establish with certainty the structure of the biradical, the ultraviolet absorption of the atropisomeric II was measured, since in the subsequent operations no transformations about the sterically important ***center*** were effected. The spectrum showed a max. at .lambda. 2950 A. (log .epsilon. 3.64). There was furthermore an indication of a new band at .lambda. 3300 A. For the proof of an atropisomeric compd. use was again made of the observation (Pickett, Walter and Prince, C. A. 31, 2514.2) that the ultraviolet spectrum of such a compd. differs from that of the corresponding mol. halves, i. e., of the like-substituted benzene deriv., practically only in the height of the extinction. The atropisomeric compd. shows at almost the same wave length as the half benzene deriv. a max. whose extinction coeff. is approx. double that of the simple benzene deriv. Me 3,5-dichlorobenzoate, m. 58.degree., obtained in 60% yield from diazotized 3,5,4-Cl2(H2N)C6H2CO2Me slowly dropped into boiling alc. contg. Na and esterified with CH2N2, gave an absorption curve of the same character as the corresponding atropisomeric II (max. at .lambda. 2920 A., log .epsilon. 3.15). The shift in the max. is only 30 A., the ratio of the extinction coeffs. is 1:3.1 (log .epsilon.2 - log .epsilon.1 = 0.49). Comparison of the coplanar (p-MeO2CC6H4)2 with BzOMe showed for the former a broad band with a max. at .lambda. 2820 A. (log .epsilon. 4.52), for the latter 2 ill-defined max. at .lambda. 2650 and 2790 A. with approx. the same log .epsilon. (2.9-2.92). The shift in the max. is again slight (30 or 170 A., depending on which of the BzOMe bands is compared with the (MeO2CC6H4)2 band), but the ratio of the heights of the extinctions is entirely different (1:40). These relationships in the ultraviolet spectra of atropisomeric compds. have been observed in all biphenyl derivs. with 4-fold substitution in the o,o'-positions thus far studied. On the other hand, it is not to be expected that they can be applied directly to biphenyl derivs. with only 2-fold substitution in the o-position. Thus, (o-MeC6H4)2 and its p,p'-disubstituted derivs. might, by oscillations about the C-C bond between the benzene nuclei as an axis, also assume a coplanar position. The possible optical influence in this position on the 2 benzene nuclei of the bitolyl system may result, as regards both the position and the height of the bands, in a greater effect, as compared with the like-substituted benzene deriv., than in a biphenyl deriv. with 4-fold substitution in the o-positions and consequently having a much more limited ability to rotate freely. To amplify their study of atropisomeric biradicals, M. and T. also prepd. 2,6,2',6'-tetrachloro-4,4'-bis(phenylxenylmethyl)biphenyl (III). (2,6,4-Cl2BzC6H2)2 with p-PhC6H4Li gave the ditertiary carbinol corresponding to III, light yellow ***glassy*** substance showing a bright blue-red halochromism with concd. H2SO4 and converted by boiling SOCl2 in benzene into the dichloride (60% yield, based on the diketone), m. 272-3.degree., which with Hg, Cu or mol. Ag in benzene gave III, sepg. from the red-brown soln. in faintly yellow flocks. The soln. was so deeply colored at 80.degree. that a 3-mm. layer was almost opaque. When it was shaken with air the Schmidlin

phenomenon could be observed several times. Peroxide, light yellow, m. 177-9.degree., liberates no I from acidified KI. Magnetic measurements on the solid III gave a value for the mol. susceptibility of -440 .+-. 20 .times. 10-6, as against -470 .times. 10 -6 calcd. from that of the chloride after deducting the Pascal increments for Cl (-20 .times. 10 -6). Hence, although the solid III is also very faintly colored, the difference between the calcd. and found values is even smaller than for I. The solid is diamagnetic within the limits of exptl. error. The red-brown benzene soln., however, again showed considerable paramagnetism. Especially in dil. solns. (1.7-1.8%), the para-susceptibility attained the quite high value of 1600 .times. 10-6 at 80.degree., corresponding, on the basis of the dimer .dblharw. 2 biradicals equil., to 75 .+-. 8% biradical content; with increasing concn. this decreased rapidly (22 .+-. 2% in 8.2% soln. at 80.degree.). The assumption of a dissocn. equil. analogous to that of the hexaarylethanes gives results agreeing well with the conception of these compds. as doubled triarylmethyls. The correctness of this conception is doubted, however, by Theilacker and Ozegowski, who, on the basis of the work of Luttringhaus (C. A. 31, 6625.7) on the formation of cyclic mixed aliphatic aromatic ethers of (p-HOC6H4)2, believe that the formation of such a cyclic dimer from a p,p'-biradical of biphenyl is impossible. Comparison of a large ring of the type of the Luttringhaus ethers with the dimeric C biradicals is not conclusive, however. The angle at the O of the ethers may be greater than the tetrahedral C angle; the dimeric biradical rings are really "4-ring" compds., and although conventional models would indicate that such compds. can be only greatly strained rings, 4-ring compds. are known which are very stable or unstable, depending on the nature of the substituents; the substituents may decrease the angle at the methyl C atom; the possibilities of mesomerism in these biradical rings may contribute to the deflection of the angle. Finally, in these biradicals a special kind of union of the 2 mol. parts to form a large ring is conceivable, viz., a loose addn. complex of the 2 biradicals in which there is, to be sure, a compensation of the spin moments of the 4 electrons participating in the 2 unions but without the formation of normal stable .sigma.-unions. Rough calcns., from the temp. coeffs. of the degree of dissocn., of the heats of dissocn. show that with increasing substitution of xenyl residues these heats of dissocn. finally become materially smaller than the quantum-mech. estns. of Huckel (C. A. 33, 107.7). As will be shown in a later paper, mol.-wt. detns. on these biradicals, in connection with paramagnetic susceptibility detns. on the solns. at the same temp., exclude the possibility that the polymerization is a chain-like process. The available data also permit a certain limitation of the assocn. possibilities. Thus, if it were assumed that I forms a trimeric ring which in soln. dissocs. into a dimer and a monomer, A3 .dblharw. A2 + A1, the susceptibility would indicate about 110% dissocn. In conclusion it may be said that true C biradicals have a magnetic moment of 2 Bohr magnetons, and in their whole chem. and phys. behavior, including their assocn. phenomena, they correspond to doubled triarylmethyls.

IT Radicals
   (free, bivalent)
IT Organic compounds
   (magnetochemistry of)
IT Spectra
   (of biphenyl derivs.)
IT Magnetochemistry
   (of org. compds.)
IT Methyl, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[4-biphenylylphenyl-, diperoxide
   Methyl, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[bis(4-biphenylyl)-, diperoxide
IT 2216-49-1, Triphenylmethyl
   (derivs.)
IT 92-52-4, Biphenyl
   (derivs., spectra of)
IT 7440-31-5, Tin
   (in water of Karlsbad springs)
IT 2905-67-1, Benzoic acid, 3,5-dichloro-, methyl ester 41727-48-4, Benzoic acid, 4-amino-3,5-dichloro-, Me ester 56961-25-2, Benzoic acid, 4-amino-3,5-dichloro- 116532-03-7, p,p'-Bitolyl, .alpha.,.alpha.'-dichloro-.alpha.,.alpha.,.alpha.',.alpha.'-tetraphenyl- 651058-99-0, Benzoic acid, 3,5-dichloro-4-iodo-, Me ester 854749-69-2, Methane, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[bis(4-biphenylyl)chloro-

854749-70-5, Methane, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[4-biphenylylchlorophenyl-   855245-68-0, p,p'-Bitolyl, .alpha.,.alpha.'-bis(4-biphenylyl)-.alpha.,.alpha.'-dichloro-.alpha.,.alpha.'-diphenyl-   855254-65-8, Methanol, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[bis(4-biphenylyl)-   855254-65-8, 4,4'-Biphenyldimethanol, .alpha.,.alpha.,.alpha.',.alpha.'-tetrakis(4-biphenylyl)-2,2',6,6'-tetrachloro-   855254-67-0, Methanol, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[4-biphenylylphenyl-   855254-67-0, 4,4'-Biphenyldimethanol, .alpha.,.alpha.'-bis(4-biphenylyl)-2,2',6,6'-tetrachloro-.alpha.,.alpha.'-diphenyl-   855254-75-0, 4,4'-Biphenyldicarboxylic acid, 2,2',6,6'-tetrachloro-, dimethyl ester   861095-99-0, Methyl, (2,2',6,6'-tetrachloro-4,4'-biphenylene)bis[bis(4-biphenylyl)-
(prepn. of)

L5 ANSWER 120 OF 124 CAPLUS

AN 1937:44120 CAPLUS

DN 31:44120

OREF 31:6135a-f

ED Entered STN: 16 Dec 2001

TI Rapid determination of moisture in liquid ammonia by means of metallic sodium

AU Pleskov, V. A.

SO Zavodskaya Laboratoriya (1937), 6, 177-80
CODEN: ZVDLAU; ISSN: 0321-4265

DT Journal

LA Unavailable

CC 7 (Analytical Chemistry)

AB The detn. of H2O in liquid NH3 by means of Na is based on the ***decolorization*** of the highly colored solns. of Na in NH3 by the formation of NaOH insol. in NH3, and depends on the titration of Na with the NH3 to be tested at -35.degree.. The slow decompn. of Na is catalyzed by Cu(NO3)2.4NH3 (cf. Horn, C. A. 2, 958). The secondary reaction of NaNH2 formation proceeds very slowly and does not affect the detn. This reaction is catalyzed by any contaminating Fe compds., which should be removed before titration. A weighed ampoule, made from a capillary tube (0.2-0.3 mm. inside diam. and 1-2 mm. wall thickness), is charged by suction with fused Na (15-300 mg. for 0.1-2% H2O in NH3), and, after weighing, is sealed at the elongated ends with paraffin. A sample of NH3 is withdrawn into a 500-cc. flask, contg. 20-30 mg. of the catalyst. It is fitted with a KOH U-tube and a charge tube provided in the middle of the upper bend with a 2-way stopcock connected to the NH3 cylinder valve by means of a brass nipple lined at the bottom with filter paper between brass wire gauze supported by Pb strips. Before charging the flask, the stopcock is turned to the outside and some of the NH3 is blown through the valve and nipple. The titration app. consists of 2 ***glass*** cylinders connected at the bottom by means of a rubber tubing. The left limb (100-50 cc. capacity) is fitted at the bottom ***center*** with a ***glass*** -rod stopper, a side gas tube reaching to the bottom and a ***glass*** -stoppered opening at the top. After immersing the app. in a mixt. of acetone and solid CO2 (or liquid NH3), the graduated limb is charged with NH3 from the flask and the left limb with the crushed ampoule. By raising the ***glass*** -rod stopper small portions of the NH3 are introduced into the left limb at intervals of 2-3 sec. The reaction mixt. is constantly stirred by a current of dry NH3 or H2 introduced through the side tube. The introduction of liquid NH3 is continued until the ***color*** disappears. A new ampoule is introduced and the operation is repeated 1 or 2 times. The amts. of NH3 used are read on the graduated limb. In the presence of large moisture contents, the energetic stirring of the reaction mixt. becomes difficult in the presence of large amts. of NaOH. Hence, the titration is carried on to a pale blue, stable for 30-40 sec. The results are calcd. by the formula: x = 114.7 g/V, where V is the vol. of liquid NH3 in cc. and g is Na in g. At -35.degree. the d. of liquid NH3 is 0.683. Since Na reacts with C5H5N, PhOH and unsatd. org. compds., this method gives the total impurities in coal-tar NH3. By this method 0.01% H2O can be detd. with accuracy of 2-3% inside of 10-15 min.

IT 7732-18-5, Water
(detn. of, in liquid NH3)

IT 7664-41-7, Ammonia
(liquid, moisture detn. in)

L5 ANSWER 121 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1930:3466 CAPLUS
DN 24:3466
OREF 24:434d-i
ED Entered STN: 16 Dec 2001
TI Analytical methods applicable to the detection of artificially ***bleached*** flour
AU Jorgensen, Gunner
SO Annales des Falsifications et des Fraudes (1929), 22, 471-86
CODEN: AFEFA4; ISSN: 0365-2157
DT Journal
LA Unavailable
CC 12 (Foods)
AB After a brief review of the analytical methods available at the present time, the interpretation of the results is discussed extensively in the light of J.'s expts. (which are described), and the following conclusions are drawn. In judging whether or not a flour has been artificially ***bleached*** the following points must be taken into consideration: (1) Natural flours, in their fresh, unaltered state, can have widely varying gasoline ***color*** values (105-235 units according to Holger Jorgensen), so that flours possessing naturally a high ***color*** value may be ***bleached*** to a considerable extent without their falling below the min. for unbleached flour. (2) During storage a considerable proportion of the coloring matter of the flour can be decompd. without the flour itself undergoing change, but the rate of this decoloration can vary; if the flour does not contain much more than 10% H2O and if it is stored in a cool, shady, dry place, the atm. of which is free from gases having a ***bleaching*** action, the ***color*** value decreases very slowly, the rate being somewhat accelerated under the action of air and light. Because of the N oxides and O2 produced, an elec. motor running in the storage place can cause a rapid fall in the ***color*** value. The temp. and H2O content of the flour are of considerable importance as regards development of microorganisms: molds, which consume successively and at an increasing rate the carotene and the flour oil, develop at high temps., while the other organisms, which do not destroy the carotene and do not consume the oil but decamp. it with liberation of free fatty acids, develop at low temps. (3) For the above reasons it is preferable, if possible, to take the samples from the ***center*** of bags of apparently undeteriorated flour and to place and keep them in tightly closing ***glass*** or metal containers. Regarding interpretation of the results of analytical detns.; (1) Presence of benzoic acid proves artificial ***bleaching*** by "Novadelox." (2) ***Bleaching*** with Cl or its compds. is shown when the Et2O-sol. Cl content is appreciably higher than in natural flours. (3) ***Bleaching*** with N chloride cannot always be detected by detn. of Et2O-sol. Cl. (4) Flour ***bleached*** with nitrosyl chloride or with a mixt. of nitrosyl chloride and Cl (Golo and Beta Chlora processes) will contain HNO2 in addn. to Cl. (5) ***Bleaching*** with N2O4 is detected by the presence of HNO2, but when such is found the conditions of storage should be carefully investigated to make sure the HNO2 was not introduced accidentally. (6) ***Bleaching*** by O3 or by H2O2 or frequently by N chloride can be detected only when the carotin content is abnormally low and it is proved that this is not due to deterioration of the flour during storage as, for instance, by development of molds. The possibility of such deterioration call be studied by detg. H2O, oil and pH value, and by microscopical and bacteriol. examns.
IT Flour
(***bleaching*** of, detection of)
IT ***Bleaching***
(of flour, detection of)

L5 ANSWER 122 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1928:40484 CAPLUS
DN 22:40484
OREF 22:4846h-i,4847a-g
ED Entered STN: 16 Dec 2001
TI New process for ***bleaching*** tallow
AU Schumaker, Charles F.
SO Soap (1928), 3(No. 10;No. 11;No. 12), 25-7;29-31,79,81;33-7,79,81,83
DT Journal
LA Unavailable
CC 27 (Fats, Fatty Oils, Waxes, and Soaps)

AB Expts. have shown that if properly dry-tendered tallow is not wet-melted cut, but is dry melted out with 2 lbs. steam pressure in the coils, and hot compressed flue gas used to blow the lines, and is ***bleached*** dry with fuller's earth so that the total H_2O present in the system is 14% of the wt. of the earth used, then the dry-rendered tallow ***bleaches*** more easily and better than the same grade of wet-rendered tallow. Drying of the tallow at 150 to 160.degree. F. under 25-28 in. vacuum aids the ***bleaching*** considerably. The phys. law which controls the ***bleaching*** action of fuller's earth is expressed by the Freundlich equation which may represent any adsorption from any colloidal soln. and takes the general form of $x/m = KC1/n$, where x/m = wt. of colloidal particles adsorbed per unit area of adsorbing agent at equil., C is the concn. of the unpptd. colloidal particles at equil., K is the sp. adsorption capacity const. and varies only with the materials in question, $1/n$ is an exponent which denotes the degree of the change taking place. If $1/n$ is exactly 1/2 the change is pure adsorption from colloidal soln. For values between 1/2 and 1 a combination of adsorption from colloidal soln. and chem. reaction is taking place. If $1/n = 1$ the process is a chem. reaction of the 1st order. For values of $1/n$ approaching 0 the change may best be imagined as a straight filtration. The value of K varies with the H_2O content of the tallow. If the H_2O in the tallow being ***bleached*** is greater than 0.3 to 0.5% the value of K will show a marked decrease and more fuller's earth will be required to ***bleach*** to the desired ***color*** . This emphasizes the value of vacuum drying. If the tallow contains less than the av. H_2O the value of K will go up a little and good results may be obtained without drying the tallow. ***Bleaching*** cost is reduced by using counter-current ***bleaching*** with fuller's earth, which is used 3 times in succession. Each time it is used the ***color*** concn. goes up. By substituting in the Freundlich equation $x/m = 140\ C0.5$, the no. of lbs. of clay necessary to ***bleach*** any given quantity of tallow from the original down to a desired red can be ascertained. In obtaining the wt. of earth used in a counter-current ***bleach*** , the final ***color*** of the ***bleached*** tallow is not used as C, but the ***color*** of the ***bleached*** tallow in equil. with the earth at its rejection point in the process which is the ***color*** at the 1st stage after ***bleaching*** once. Results obtained indicate that in ***bleaching*** tallow down to its final ***color*** in one ***bleach*** , there is but 25 to 30% of the potential value of fuller's earth used, with consequent high loss of fat in the press cake. In counter-current ***bleaching*** it is essential that the presses are not blown with live steam, which damages the earth for further ***bleaching*** . Washed, filtered and compressed and superheated flue gas or CO, is recommended. The best temp. at which to ***bleach*** tallow with fuller's earth is 215.degree. F. by lab. test, but in the plant this becomes the heating surface temp., which should be below 215.degree. F. and which will represent an economic balance between the decreasing cost of the necessary diminishing heating surface and the increased time necessary to achieve the same ***bleaching*** action. A temp. of 195.degree. F. was chosen and a heating surface of 300 sq. ft. as a max. amt. for ordinary demands to heat 40,000 to temp. in 3 hrs. The question of agitation of the tallow to secure proper suspension of the earth is more difficult than would be indicated. A properly designed agitator should give a slight upward pulsating motion. This is accomplished through the use of a wide-diam., low-pitch helix, whose plane surface not only follows a helical curve in ascending from the bottom to the top of the tank, but also rotates outwardly at a slight angle about an axis at every point tangent to the ***center*** line of the helical plane and coincident with it. The heating surface consists of tapered hollow Al disks or fins welded to a 6-in. hollow bronze pipe and sepd. from each other by attached spacing collars which are drawn on the disks when they are stamped from the sheet metal and when in place the whole is attached to the agitator which at 100 r. p. m. will vibrate a whole charge of tallow so that its top surface is covered with ripples and without a positive velocity along any path other than vertical. The construction material of the agitator and filter press is duralumin and all tanks and equipment are lined with ***glass*** , enamel or Al. In running the ***bleach*** through the press it should never be necessary to exceed 5 lb. pressure. The earth used should be as nearly as possible free from Fe, as the Fe has more to do with the ***bleaching*** efficiency of earths than any other one property. A plant for handling 120,000 lbs. of tallow per day would cost a minimum of $100,000.

IT Tallow
(***bleaching***)
IT ***Bleaching***
(of tallow)

L5 ANSWER 123 OF 124 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1925:8188 CAPLUS
DN 19:8188
OREF 19:1108e-i,1109a-i
ED Entered STN: 16 Dec 2001
TI Qualitative analysis of the elements of the first to third groups when present together, with special regard to spot tests
AU Tananaev, N. A.
SO Z. anorg. allgem. Chem. (1924), 140, 320-34
DT Journal
LA Unavailable
CC 7 (Analytical Chemistry)
AB Tests are given whereby the elements Ag, Hg, Pb, Bi, Cu, Al, Fe, Ni, Co, Mn, Cr, Zn and Cd may be tested individually in the presence of any of the others. It is assumed that the elements are in HNO_3 soln. and that ferrous and mercurous salts have been oxidized. Ag. (a) To a drop of the soln. on a watch- ***glass*** add a drop of HCl. Ag is indicated by a white ppt. which remains on diluting with H_2O and warming. (b) Add excess NH_4OH to a drop of the soln. on a watch- ***glass*** . On a filter-paper unite a drop of the clear filtrate with a drop of $SnCl_2$ soln. A black spot shows Ag. (c) Add a little of the soln. to a filter-paper moistened with K_2CrO_4 soln. Add a drop of NH_4OH to the middle of the spot produced and moisten with a drop of AcOH. Ag gives a red-brown ring of Ag_2CrO_4 insol. in the AcOH. Hg. (a) On a strip of filter-paper unite a drop of the soln. to be tested with a drop of $SnCl_2$ soln. and add a drop of aniline. A gray or black spot indicates Hg. Large amts. of Ag also give a gray spot and in such case the Ag should be previously removed by KCl. (b) When large amts. of Ag are present the Hg test may also be carried out as follows: On a filter-paper place a drop of the soln. to be tested and add a drop of KCNS soln. and a drop of $SnCl_2$ soln. On moistening with aniline a greenish ring and a black ring are formed. With NH_4OH the green disappears but the black ring remains. (c) Treat a drop of the soln. on a watch- ***glass*** with an excess of Na_2S and warm slightly. Transfer the filtrate to another watch- ***glass*** and treat with an excess of AcOH. A black ppt. denotes Hg. (d) If the excess Na_2S above is not too great, and a drop of the liquid contg. the metal sulfides is transferred by means of a capillary to a filter-paper, the ppt. will remain in the ***center*** of the moist spot produced and about the spot will be a characteristic ring of HgS. Pb. (a) To a drop of the soln. on a watch- ***glass*** add a drop of dil. H_2SO_4. Pb gives a white ppt. on vigorous shaking and rubbing with a ***glass*** rod. (b) If a large amt. of Ag has been shown to be present, treat a drop of the soln. on a watch- ***glass*** with Na_2S, then with an excess of 4% HCl and heat to boiling. Filter and test the filtrate on a watch- ***glass*** for Pb with H_2SO_4. (c) To a drop of the soln. on a filter-paper add an excess of KI soln. and then a drop of $SnCl_2$ soln. The presence of Pb is shown by an orange-red ***color*** which disappears on adding an excess of satd. KCNS soln. or more slowly with aniline. Bi interferes with this test. Bi. Carry out the test as in the third test for Pb above using KI, $SnCl_2$ and aniline. The orange-red ***color*** does not disappear with KCNS. (b) The preceding test can be made on a watch- ***glass*** by using an excess of KI soln., $SnCl_2$ soln. until the I ***color*** is destroyed, and aniline. A yellow to red ***color*** is formed which is not destroyed by KCNS. Cu. On a strip of filter-paper add to a drop of the soln. a drop of benzidine in AcOH and a drop of satd. KCN soln. A deep blue spot appears when Cu is present. Al. Impregnate a strip of paper with satd. $K_4Fe(CN)_6$ soln. and dry. Add a drop of the soln. to be tested. With Al a dark spot appears surrounded by a bright aq. zone. Add to the spot a drop of NH_4OH soln. and allow to stand. Treat with alizarin. A rose-red ring appears around the inner spot. The sensitiveness of the reaction is increased by repeating the treatment. Fe. (a) Impregnate a strip of filter-paper with satd. $K_3Fe(CN)_6$ soln. and dry. Add a drop of the soln. to be tested, then a drop of KI soln. and finally a drop of $Na_2S_2O_3$ soln. Fe gives a blue ring. When little Fe is present, a rose-red spot indicates Cu. (b) Treat a drop of the soln. on a filter-paper with a slight excess of Na_2S soln. and a drop of concd. H_2SO_4. Dry over an alc. flame. Moisten the outer

zone with K3Fe(CN)6 soln. Compare to a blank test. Ni. (a) The presence of large amts. of Cu masks the dimethylglyoxime test for Ni unless KCNS is present. A drop of the soln. to be tested on filter-paper gives a brown spot which disappears in NH3 vapor. A drop of dimethylglyoxime now gives a red ***color*** with Ni. (b) A better test is obtained if the filter-paper is impregnated with (NH4)2HPO4 soln., dried, treated with the soln. to be tested, then with dimethylglyoxime and exposed to NH3 vapor. Co. Nitroso-.beta.-naphthol cannot be used for Co if Fe and Cu are present. (a) Treat a drop of the soln. on a strip of filter-paper with a large excess of satd. KCNS soln. Expose the resulting spot in NH3 vapor and warm. When dry, a deep blue ring appears, best seen in transmitted light. In doubtful cases expose again to NH3. (b) Treat a drop of the soln. with an excess of KCNS soln. ***Decolorize*** the spot with SnCl2 soln. and moisten with aniline. With Co a green or blue ring is formed which disappears when treated with NH3. This test is uncertain with large amts. of Ni. Mn. Treat a drop of the soln. on filter-paper with satd. NH4Cl soln. and moisten the spot with a soln. of benzidine in AcOH. Mn gives a blue ring. Cr. On a watch- ***glass*** treat a drop of the soln. with an excess of Na2O2 and mix. By means of a capillary transfer a portion of the mixt. to a filter-paper. Moisten the outer zone with a soln. of benzidine in AcOH. A blue ring in the outer zone indicates Cr. Zn and Cd. Treat a few drops of the soln. on a watch- ***glass*** with an excess of NH4OH. Filter by means of a capillary. Transfer the filtrate to a porcelain plate, evap. to dryness, and heat to remove NH4 salts. Moisten the residue with H2O and treat with an excess of Na2O2. Filter, transfer the filtrate to a watch- ***glass*** and treat with Na2S soln. A white flocculent ppt. indicates Zn. Wash the ppt. formed with Na2O2, with H2O, treat with KBr soln. and with an excess of AcOH. Neutralize the filtrate on a watch- ***glass*** with NH4OH and treat with a soln. of KCN and Na2S. A yellow ppt. indicates Cd. Many of the above tests are much more delicate if the elements are previously divided into small groups. The following procedures for this purpose make use of the differences in soly. of the sulfides. Ppt. the elements of the first 3 groups with sulfide from NH4OH soln. Treat on a porcelain plate with an excess of AcOH and heat to boiling. Transfer the clear filtrate by means of a capillary to a watch- ***glass*** , add a drop of Br-H2O and test as above for Al, Fe, Co, Ni and Mn. Neutralize the residue with NaOH, treat with an excess of Na2O2 and test for Cr. Wash the residual sulfides with AcOH, then with H2O and suck dry. Treat in the cold for 2-3 min. with 0.6 N HCl. Transfer the filtrate to a watch- ***glass*** , neutralize with NH4OH, add a drop of KCN soln. and a drop of Na2S soln. Zn gives a white ppt. Filter the ZnS, wash twice with 0.6 N HCl and boil with N HCl. Transfer the filtrate to a watch- ***glass*** and neutralize with NH4OH. Filter the Pb(OH)2 and transfer the flitrate to a watch- ***glass*** . Add a soln. of KCN and Na2S. Cd gives yellow CdS. Dissolve the Pb(OH)2 in ACOH, add KI and SnCl2. Pb gives an orange ppt. sol. in KCNS. Wash the residual sulfides with N HCl and boil with 4 N HCl. Treat the filtrate on a watch- ***glass*** with KI and SnCl2. Bi gives a yellow ***color*** not destroyed by KCNS. Dissolve the residual sulfides in a few drops of aqua regia. Dil. with H2O, filter, and test the filtrate for Hg and Cu as above. Wash the residual AgCl with H2O. Dissolve in NH4OH and filter. To the filtrate add SnCl2 soln. Ag gives a black ppt. One strip of filter-paper folded 4 times is sufficient for all of the above filtrations.

IT Analysis
(detection of elements of 1st to 3rd groups)

IT 7429-90-5, Aluminum 7439-89-6, Iron 7439-92-1, Lead 7439-96-5, Manganese 7439-97-6, Mercury 7440-02-0, Nickel 7440-22-4, Silver 7440-43-9, Cadmium 7440-47-3, Chromium 7440-48-4, Cobalt 7440-50-8, Copper 7440-66-6, Zinc 7440-69-9, Bismuth
(analysis, detection)

IT 7553-56-2, Iodine
(analysis, detn.)

IT 7553-56-2, Iodine
(analysis, detn. in iodides)

L5 ANSWER 124 OF 124 CAPLUS

AN 1912:11970 CAPLUS

DN 6:11970

OREF 6:1811g-i,1812a

ED Entered STN: 16 Dec 2001

TI New Reactions of Salicylic Acid

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AU   Barral, E.
SO   Bull. soc. chim. (1912), 11, 417-20
DT   Journal
LA   Unavailable
CC   17 (Pharmaceutical Chemistry)
AB   (I) To 2 drops of the soln. to be tested, add 2 cc. conc. H2SO4, shake,
     cool and add drop by drop 10% NaNO2.  The following   ***colors***
     appear successively: orange-yellow, reddish orange, blood-red with
     greenish dichroism, gooseberry-red.  The spectrum of the final soln. is
     almost identical with that of reduced hemoglobin, characterized by a
     single band between D and E whose   ***center***   corresponds approx. to
     .lambda.552.  When H2O is added, the   ***color***   changes to an orange
     shade with slight dichroism.  The test is quite sensitive for salicylic
     esters provided the ester group does not itself give a   ***color***   ;
     thus, with salol, blue, red and violet-black   ***colors***   are formed
     successively, the first 2 being due to PhOH.  Sulfosalicylic acid gives no
       ***color***   .  The sensitiveness depends on the method of operating;
     under the most favorable conditions 0.002-0.005 g. salicylic acid can be
     detected. (II).  To 2-3 cc. of a 0.1% soln. of HOC6H4CO2H add NH4
     persulfate the size of a pea and b.; the liquid becomes yellow, then
     brown, and finally a black-brown ppt. is formed; the more of the acid is
     present, the blacker is the ppt.  If the b. is continued long enough, the
     liquid is   ***decolorized***   . (III) Bring together on a watch
       ***glass***   1 drop each of a dil. soln. of the acid and of Mandelin's
     reagent; blue streaks, rapidly becoming olive-green, appear.  The test can
     be made much more sensitive by first heating the salicylic acid soln. with
     H2SO4 to convert it into the sulfosalicylic acid; 1 drop of 0.01% soln.
     will then give the test. (IV) Schlagdenhaufen's reagent produces, in
     salicylate solns. in the cold, a yellow   ***color***   ; on warming
     gently, it turns orange and orange-brown, then a red ppt. of Se is formed
     and H2Se is evolved.  On further heating, a black ppt. is formed.
IT   69-72-7, Salicylic acid
        (detection)


=> d his

     (FILE 'HOME' ENTERED AT 12:40:35 ON 17 FEB 2006)

     FILE 'CAPLUS' ENTERED AT 12:40:42 ON 17 FEB 2006
L1         1530 S COLOR AND (CENTER OR CENTRE) AND GLASS?
L2        53928 S (GRATING OR HOLOGRA?)
L3           41 S L1 AND L2
L4          129 S L1 AND (BLEACH? OR DECOLORIZ? OR DECOLOURIZ?)
L5          124 S L4 NOT L2

=> log y
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                   526.86     527.07

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                  -123.75    -123.75

STN INTERNATIONAL LOGOFF AT 12:44:22 ON 17 FEB 2006
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